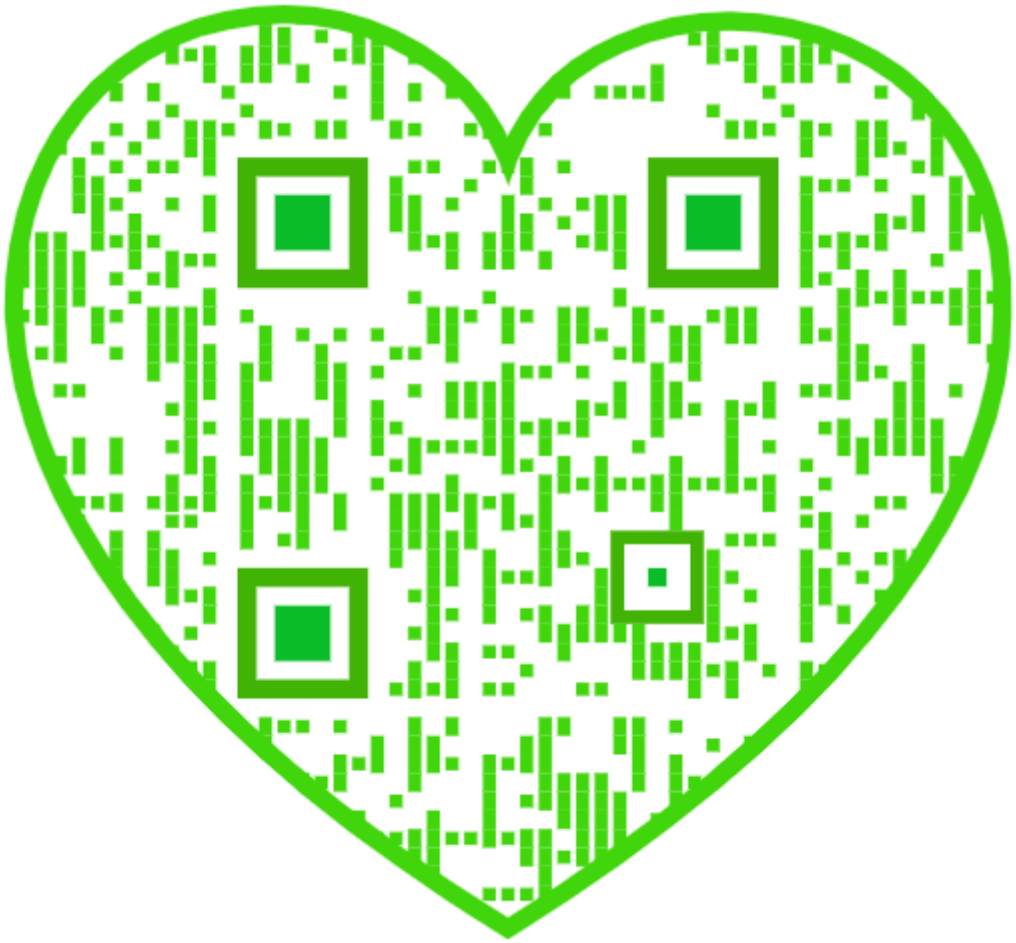

THE SOLDIER'S

MANUAL OF SANITATION

AND OF

First Help in Sickness and when Wounded.

ADAPTED FOR

OFFICERS, NON-COMMISSIONED OFFICERS, AND PRIVATES
OF THE ACTIVE FORCES,
MILITIA, YEOMANRY, AND VOLUNTEERS, FOR HOME
AND FOREIGN SERVICE,

FOR PEACE AND FOR WAR.

By DEPUTY SURGEON-GENERAL
CHARLES ALEXANDER GORDON, M.D., C.B.

"Mon bien le plus précieux, c'est la santé du soldat."
TURENNE.

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INTRODUCTORY.

MANUALS of various kinds, specially intended for use by the soldier, are published in the several countries of Europe, and among them instructions given, more or less detailed, in regard to the best means of preserving health, decreasing the risks of sickness, and of affording some measure of aid to their comrades when attacked by illness or wounded in battle. I have accordingly been induced to frame the following brief directions, in the hope that they may reach the hands of non-commissioned officers and private soldiers in our own army, whether of the active or auxiliary services. I have endeavoured to adapt them to the varying conditions of our army, and it only remains to be seen how far they may be considered useful to those for whom they are particularly intended.

C. A. GORDON.

April, 1873.

List of Works written by the present Author, viz.:

China from a Medical Point of View.

Army Hygiene.

Army Surgeons and their Works.

Experiences of a Regimental Surgeon in India.

The French and British Soldier.

Lessons in Hygiene and Surgery from the Franco-Prussian War.

THE SOLDIER'S

MANUAL OF SANITATION.

ACCIDENT.—A soldier has fallen, say from a height or down a stair. He is found at the foot, severely injured and insensible. At first it is impossible to say what is the nature or extent of his injuries, but his limbs are doubled up underneath him, and he is bleeding from the head or other part. In such a case, the first care of the man who first finds him should be to deal gently with him, for the chances are that a limb, or a rib, or perhaps more than one, are broken. He should therefore be carefully and, without roughness, turned over and placed in a natural position, his limbs stretched out, his collar and tunic undone. He is better placed upon his back than in any other position, as on it he can breathe most easily, and water can best be thrown upon his face. If his limbs are bent in other parts than at the joints they are *broken;* and in that case require the greatest care in being brought back into position. If they cannot be naturally moved at the joints, they are *dislocated.* If a second man be present, he should be sent for a stretcher, and the injured one conveyed to hospital.—*See* STRETCHERS.

ACCOMMODATION.—The nature of the accommodation afforded to troops exercises an important influence upon their health. Under ordinary circumstances soldiers

occupy only such buildings and places as have been selected with great care for them; on active service, however, and occasionally also under other conditions, neither the soldiers nor their officers are in a position to select their accommodation, it may therefore be of some importance to them to have a few general instructions on this point. It is a principle of army hygiene that the *accommodation* of the soldier has an importance equal to that possessed by his clothing and food, and it is known that certain diseases, more especially those of the chest, as well as some kinds of fever, are produced or averted according to the way in which men are housed. Whatever be the kind of accommodation, there are three requirements that must be considered, namely—space, ventilation, and cleanliness. These are necessary to health, and it were better that men should sleep in the open air, with no other covering than their great coats and blankets, than be *accommodated* in buildings where these requirements are non-attainable. On active service, the use of buildings usually occupied by crowded assemblies—as churches, theatres, ball-rooms, &c.—should be avoided. When private houses are used temporarily, it is customary to consider that in rooms 15 feet wide, or less, one man for every yard in length may be accommodated; in those over 15 feet wide, but under 25 feet, two men per yard of length; for rooms of more than 25 feet broad, three men for every yard in length.—*See* SPACE.

AGUE.—In countries or stations where this affection prevails, *quinine* is now issued to soldiers as a preventive. Experience has quite proved the usefulness of this remedy for the purpose, and therefore soldiers should seek to receive it sufficiently early; for once that they have actually become attacked with ague, it is, of course, too late for them to take preventive measures—they must then apply to their medical officers. In districts where ague prevails, soldiers should guard themselves as much as possible from exposure at night. When weakened by

debauch they are more liable to be attacked by this, and, indeed, all other diseases, than they are while their bodily strength is unimpaired by excesses. Good and plenty of food, sobriety, and suitable clothing are the best means of guarding against ague.—*See* MALARIA.

AIR.—Without pure air around us and to breathe we should speedily become poisoned, as completely so as if we were to imbibe any of the substances known to be destructive of life. Each full-grown healthy man takes into his chest about thirty inches of air at each inspiration, discharging nearly the same quantity, but considerably altered at each expiration. Not only does the air around him become thus *tainted* with the ordinary gaseous products of breathing, but also with the numerous—although invisible—shreds from the lungs, throat, and mouth that are continually being thrown off, and from the perspiration which constantly is going on from the surface of the body, although in too small quantities and too gradually for one to be conscious of it, the total amount being 25 to 40 ounces per day. When men themselves, or their comrades, are not careful of cleanliness, or when they are suffering from disease, the nature of the materials thrown off from them into the air becomes most offensive and injurious to health, and may readily be seen by means of a microscope; thus, then, the necessity of constant change of air in occupied rooms is self-evident. It is calculated that each man in barracks should have a space equal to 600 cubic feet of air in temperate climates, and that of this quantity about 220 should be changed at least every two hours. Men know that in certain states of the air their sensations are different from what they are at others. Damp warm air depresses, while dry air exhilarates. The fear of exposing themselves to the air in barracks is groundless, and it is only those persons who neglect to do so habitually who suffer from "cold," when accidentally exposed to draughts. It is more injurious for men to sleep in foul air than to breathe it during the day or when

awake. The risks from foul air increase according with the numbers of men occupying the same place, and the longer time they are continuously together; hence the necessity of leaving occupied rooms absolutely vacant for a certain time daily. Air is also more liable to become foul where vegetation is absent than where it exists in moderate quantity. Dirt, low moral state, ignorance, and prejudice, especially among soldiers' families, result in foulness of air and discomfort in their quarters.

AMUSEMENTS.—Unless the spare time of a soldier can be occupied by amusements in barracks, he will seek for them elsewhere, hence it is that so much has of late years been done to supply him with these. As a rule, however, those most enjoyed are such as are of a muscular nature; rackets, cricket, ball, or quoits, taking the place of the reading-room. This is very natural, and probably it might be well to recognise the fact. Muscular amusements benefit the soldier's health in two important respects: by indulging in them he is kept away from low localities and persons, and his powers are kept in practice for the active duties which form the reasons of his existence as a soldier.

ANATOMY OF A MAN'S BODY.—In general terms a man's body may be described as consisting of a framework formed by bones, covered by flesh or muscles, and enclosed in the skin. The arteries and veins form vessels by which the blood is carried to, and distributed in, the head, trunk, and limbs, and by which after having nourished these various parts it is returned to the heart, whence it again begins its circuit. The *head* comprises the cranium, in which the brains are contained, and the face. The *neck* connects the head with the trunk, and is usually for the sake of convenience considered as belonging more to the former than the latter. The front of the neck is usually spoken of as the throat; the back part, as the nape, forming as it does the upper portion of the back bone, spine or

vertebral column. The *trunk* comprises the thorax or chest, abdomen or belly, and the pelvis or lower belly. The chest is formed on either side by the ribs, bent like so many bows. To them the sternum or breast bone is attached in front, and between them behind is the spinal column or back-bone to which they are firmly attached by means of joints admitting of slight motion. At the upper part and in rear of the chest are the shoulder blades, one on either side of the spine, and forming the shoulder. Within the chest are contained the lungs, one on either side by which respiration is performed, and the heart, which beats during life and propels the blood through the various vessels in which it circulates. The precise position of the heart is indicated by the left nipple, and from that point to the pit of the stomach its beat can generally be felt or seen. The abdomen or belly is that part of the trunk situated between the chest and the upper portion of the circle of bone forming the hips and arch of the groin. At the upper and front part is the pit of the stomach or epigastrium, containing the stomach and intestines or bowels; to the right, under the short or false ribs is situated the liver, to the left in the corresponding position, the spleen, behind and on either side of the back bone in the *reins*, are the kidneys, from which the French name of the *region* or division of the body is taken. The *loins* include the space at the back between the short ribs and upper edge of the hip bones, being but another term for the reins. This part is also called the *lumbar* region. The lower belly or pelvis is formed by a solid circle of bone, the sides of which are called the hip bones, the back part the *sacrum* or *sacred* bone, and the front, the pelvis. Within this circle are contained the bladder and part of the great intestine or rectum. This circle gives support at the sides to the thighs by means of the hip joints. In front the *genital* organs are attached; behind and towards the sides are the *buttocks*, and between them, below and in the centre the *anus* or lower opening of the bowels. The limbs comprise the *superior extremities* or arms, and the *inferior* or legs. The superior are united

to the chest by the shoulder joint or articulation, the movements of which are the freest of all joints; the limb comprising the arm, fore-arm and hand. The arm consists of only one bone, the fore-arm of two placed side by side; the joint connecting the two parts being the elbow. The hand consists of many bones. It is united to the fore-arm by means of the wrist joint. It comprises the *hand* properly so called, and the fingers, the thumb being anatomically included as a finger. The hand includes the *carpus* and *metacarpus*. The *inferior extremities* or *legs*, are much stronger than the arms. They are all attached to the trunk of the body by means of the hip joints, and include three divisions; namely, the thigh, leg, and foot. The thigh, like the arm, consists of one bone, the leg of two, the joint between those parts being the knee, on the front of which is the knee-cap, or *patella;* behind the *ham*, or *popliteal space*. The front part of the leg is called the *shin;* the part behind, the *calf*. The foot, like the hand, is composed of several bones, these forming the *foot* proper and the *toes*. The foot comprises the *tarsus* and *metatarsus*. It is united to the leg by means of the *ankle*-joint, immediately behind which is the *tendo-Achilles*. The point of support of the foot is at the hinder part, the *heel;* in front, the *ball* of the toes. The part between these points includes the *sole* or *arch* of the foot; the *instep* being the upper or convex part of that arch.

The body is nourished by the *blood*. The blood contains the natural nourishment removed from the food in the process of digestion, the refuse being discharged in the shape of *fæces*, &c. The blood being sent on from the heart, circulates to all parts by means of *arteries*, returning to it by the *veins*. The arteries beat in correspondence with the beat of the heart, and can readily be felt at different points, the wrist being the most usual; the beat there constituting the pulse. The blood contained in the arteries is of a bright vermillion colour. The *veins* bring back to the heart the blood after it has given its nourishing properties to the different parts of the body, the blood in them being

of a dark colour. They are exempt from pulsation; and those upon the surface can be traced as blue lines of greater or smaller size under the skin. It is desirable that soldiers should have at least a general knowledge of the parts which together constitute their own bodies, and accordingly these particulars are given for their guidance.

ANIMALS in, or near barracks, are prohibited by regulations; cows, pigs, goats, poultry, horses and dogs being specially enumerated as those that are not to be kept or permitted to run loose. In some stations, and especially in India, the practice of keeping pets, is to a certain extent, permitted, and is in many instances deserving of encouragement. Not only does it *humanise* a soldier, developing feelings of kindness in him, but experience shows that no actually vicious man is ever fond of *pets*. The very fact, therefore, of such creatures being kept indicates the existence of some of the better feelings of our human nature. The interest taken by a soldier in a pet, and the time occupied in its care, or playing with it fills up a gap that might otherwise be occupied in ways injurious to health and well-being.

APOPLEXY (*see also* HEAT APOPLEXY).—A man complains of severe pain in his head; there is a sense of fullness; he suddenly falls, or becomes insensible; the breathing is slow and *stertorous*, or, in other words, with heavy snoring; the face is flushed, blue, or of otherwise unnatural colour and aspect; the eyes are open and fixed, or staring; the mouth frothy; the limbs paralysed; involuntary passage of the urine and stools; the pulse slow and weak. Often the patient, while suffering from these symptoms, tosses himself from side to side, and every moment manifests the existing danger of death taking place.

In such a case remove at once all encumbrances, undo the clothes, especially at the collar, take off the necktie or stock, undo the braces, open the waistbelt of the trousers,

remove the patient to an open place, where the fresh air may freely play upon him, bathe the head and face, sponge the body with cold water, in summer adding to it vinegar or salt to increase its coldness; place a little vinegar, or hartshorn, or smelling salts under the nostrils, rub the legs and soles of the feet, give the patient cold water alone, or with a little spirits, to drink, and take immediate steps to have him carried to hospital.

BAKING.—In India the native bakers have always been adepts at arranging bakeries on the line of march, and preparing bread for the troops. They have iron frame-pieces of ovens provided by the commissariat; these they cover over with wet clay, and soon thus fit up an oven. On home service steam or field ovens are provided, these being drawn by horses. Each such oven is capable of baking 109 loaves of 3 lbs. each in a batch, and admits of four batches being turned out in ten hours. The field ovens, Aldershot pattern, are of sheet iron, and can turn out 150 lbs. of bread at a time. These were used on the Red River Expedition. Arrangements are officially made for supplying troops with baked bread wherever practicable.

BARRACKS.—Whenever troops enter barracks, whether after a severe march or drill, they should partially close the windows, that is, sufficiently to prevent a direct current of cold wind blowing over them. They should dispose of their arms and equipment in a proper manner, and having done so, proceed to undress themselves slowly. If the clothing is wet, it must be changed without delay, dry articles being put on instead. The hands, face, and feet should be bathed in cold or tepid water, or with spirits and water, excoriations being soothed by the use of a little melted suet or lard, for which purpose French soldiers often carry a small supply. The more free ventilation is maintained the more wholesome barrack rooms will be. Fires favour ventilation, but they do harm at night by rendering

the places too hot. Generally some windows to leeward may be kept slightly open. Men should themselves be careful that dirt is not allowed to accumulate in presses and on shelves, into or on which it may be the officers are not in the habit of looking. The idea of having their reserve bread or portion of meat put away among dust, or exposed to the emanations of a barrack room is itself very nasty.

The longer each day soldiers are out of the barrack rooms in which they sleep at night the better for their own health. In hot countries arrangements are made so that they may have *day rooms* in which to pass their time while the state of season or weather prevents them from being out of doors.—See *Queen's Regulations.*

BATHING.—The free use of cold or tepid water to the whole surface of the body is not only grateful according to season, but is absolutely necessary for the preservation of health, by removing offensive and impure matters from the pores and surface generally, and preserving the skin in a flaccid state. In the case of men who have not previously been in the habit of bathing some degree of caution is necessary in breaking them in to the custom; but in the case of those habituated, not only is the free use of cold water bearable in cold weather, but it is enjoyable, and, moreover, fortifies the person using it against catching cold and against various diseases. Men reduced in health by dissipated habits or tropical diseases are often injuriously affected by taking a cold bath, whether in the house or outside. The cases of all such should be noted by their sergeants, and the surgeon made acquainted with them. Bathing in rivers is only to be recommended in European or other temperate climates, and in mild weather. In tropical and other hot countries it is objectionable, except, perhaps, during the cold season, but then, what between the risks of quicksands, alligators, &c., the safest way is to warn the men against indulging in it. Under ordinary circumstances, and more especially after the men come off the march or from severe fatigue duties, they should avoid

bathing in rivers or lakes. During the prevalence of strong wind, especially if from the north or east, they ought also to refrain from it. A bath in a river or lake should, if possible, not be taken until three hours after breakfast, or when the stomach is empty. When the men are hot they should undress slowly, then go gradually into the water. They ought not to remain longer than a quarter of an hour in the water, and any time beyond twenty minutes is actually injurious to them. On coming out, a man should dry himself as completely as possible, and having done so, should take moderately active exertion. If bathing in the sea, ten minutes is considered sufficiently long to remain in the water.

The Royal Humane Society has issued the following notice:—Avoid bathing within two hours after a meal, or when exhausted by fatigue or from any other cause, or when the body is cooling after perspiration, or altogether in the open air if, after having been a short time in the water, there is a sense of chilliness, with numbness of the hands and feet; but bathe when the body is warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting or standing undressed on the banks or in boats after having been in the water. Avoid remaining too long in the water; leave the water immediately there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach. The young, and those who are weak, had better bathe two or three hours after a meal; the best time for such is from two to three hours after breakfast. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser.

BATTLE.—Every soldier (and officer) before going into battle should be provided with a ticket of identification, and with a long strip of bandage, and a piece of linen for use in the event of his being wounded. The continental

troops carry the former around the neck, the two latter in the left pocket of their trowsers. As battle is the great object of the existence of a soldier, so it is the gravest duty in which he can be engaged. It is well therefore that men should behave worthily of these two circumstances, with a steady determination to fulfil their duty, whatever the result may be to themselves individually. Great elation of spirits, or great excitement, soon give way when the real struggle begins, nor is it by any means those who are most demonstrative in the early part of the fight who acquit themselves best in it. History tells us that men and officers who have thought most seriously of the duty to be performed and the perils run in battle, are those who have ever acquitted themselves best. This was the case in the armies of William the Conqueror as compared with those of Harold, in those of Cromwell as compared with the Cavaliers, and in the late war, in those of the Prussians, as compared with those of the French.

A man should bear in mind that his great object is to economise his strength in battle. Men fatigued, must necessarily be beaten by those who are fresh. Besides this, when a battle begins no man can say when or how operations are to end, or what amount of exertion he may have to perform. Hence, again, the necessity of having strength to begin with. There will be use for all a man has before many hours are over. It is always desirable that a soldier should not enter battle after a fast, that he should have in his havresac a small reserve of food to use when necessary. The man who is under the influence of drink, if he does not commit an indiscretion and get wounded, soon lags behind, and is worse than useless.

BEARDS.—There is much said about the wearing of beards by soldiers, and the restrictions under which they are in this respect, as compared with sailors and policemen. On active service, and on some foreign stations, beards are permitted, but not so in the United Kingdom. They have been advocated on the score of health; but considering

the youth of the great majority of soldiers of the present day, and how few could sport good beards even were they permitted to do so, it cannot be said that much force applies to this reason. The one argument in their favour is that shaving takes up time, and is more or less a trouble.

BEDDING.—Irrespective of the periods laid down in "orders" for changing the different articles of bedding, the soldier should know that cleanliness in this respect is essential to his health. Whenever, therefore, the sheets or blankets become accidentally soiled, they should be changed. The practice of getting out of bed and going outside at night, without clothes or shoes on, renders the soldier very liable to a chill, and subsequent attack of illness more or less severe. So, also, the practice of throwing himself half undressed on his bed when hot, or leaving his clothes off at night, as men often do in India, is often followed by serious illness. The oftener it is possible to expose bedding in which men sleep to the sun and breeze, the better it is for purposes of health.

BEDS IN BARRACKS.—The "regulation" bedstead is 6 feet 4 inches in length, by 2 feet 3 inches in breadth. It is calculated that in barracks the interval between adjoining bedsteads should be a foot and a half, that between the foot of *opposite* row 6 feet at least, although there are many circumstances under which neither is attainable. Beds should be at least 6 inches from the wall, their feet directed to the centre of the room, and whenever it can be avoided, they should not be placed in corners or recesses, where free circulation of air is impossible. Everything over a foot and a half between adjoining beds is so much gained for health; everything under is so much lost. In *hospital* the rule generally observed is that the spaces between beds shall be equal to the breadth of a bedstead —that is, 2 feet 3 inches.

BEER.—In reality the use of beer to excess is little if at all less injurious to health than that of spirits. In small quantities taken after the heat of the day is over, say a pint, its injurious effects are at their minimum; but taken in large quantities, or during hot weather, it stupefies the person, incapacitates him for work, and renders him liable to illness, either fullness in the head, or *oppression* in the chest. When long indulged in it deranges digestion, renders the stomach irritable, induces a feeling of sickness and want of appetite for meals, and, moreover, tends to cause diseases of the liver and kidneys. In India and other hot countries the free use of beer, especially during the day-time, often leads to fatal attacks of *heat apoplexy*. Good beer should be clear and free from sediment when left standing, with moderate degree of white froth; have a pleasant bitter taste, neither too bitter nor *clammy*. What is called old ale is only beer that has become a little acid, and the use of such is liable to induce diarrhœa and pains in the stomach. It is also wise to warn soldiers against *doctored* beer, such as they sometimes get in low public houses. There is reason to believe that this is often given to them so that they may become *drugged*, and thus the men readily fall into the power of loose women attached to the houses, or perhaps get robbed.

BELTS OF FLANNEL are issued as part of the soldier's kit, but it is well to impress upon him their great value for preserving health. Their use often prevents cholera, colic, or dysentery, as their neglect induces those diseases. In damp and unhealthy countries, on the march, and in bivouac they are extremely useful, and should never be dispensed with during the night, at which time the liability to such diseases is greatest.—*See* CUMMURBUNDS.

BILLETS.—Unfortunately it so happens that the owners of public-houses in which soldiers are billeted sometimes endeavour to make them spend money in drink. There

are also various other temptations thrown in their way, including loose women whom they meet in the town; and the man who values his own comfort and health will avoid both. There is no doubt that infectious diseases are sometimes contracted in billets, notwithstanding that the officers take care to make all preliminary inquiries. All that a soldier can do is to look carefully about, and if he finds anything wrong, tell his sergeant, who will report it to his officer. He should be careful to see that his bed is clean.—*See* SPACE.

BISCUIT.—This form of *bread* should, as a rule, be soaked either in soup, tea, or coffee, before being eaten. If used in a dry state it acts as a sponge in the stomach, soaks up the natural juices, and in the long run deranges digestion. The French soldiers are very particular on this point. They say that its continued use causes obstinate diarrhœa; and certainly it does heartburn. It is only issued when fresh bread is unobtainable.

BITES are sometimes caused by men, sometimes by animals. If by a dog, they are sometimes followed by *hydrophobia*, a mortal disease; and the fact should be borne in mind that an animal of this kind if enraged, may produce the disease. Hence soldiers should avoid going near dogs while fighting. In the cavalry and artillery bites are occasionally caused by horses. In cases of such injuries the best thing to be done until the person can be seen by a surgeon is to bathe the wound instantly with warm or hot water, so as to encourage the bleeding from them.

In BITES OF TARANTULAS, CENTIPEDES, &c., apply the oily matter in a tobacco pipe, spirits, hartshorn, ipecacuanha, honey, or sugar.—*See* SNAKE BITE.

It is recommended in the case of bite by an enraged or rabid dog, to place without delay a ligature or bandage upon the wounded limb at a point nearer to the body, provided it be possible to do so. The wound itself should

be pressed strongly with a view to thus cause the exit of the poisonous matter. The wounded part should then be placed in warm water, and the services of a surgeon obtained without delay.

BIVOUAC.—It is comparatively seldom, now-a-days, that our soldiers are called upon to bivouac. It may be possible that some day or other it will again be required of them. If it be so in a hot country, their first duty should be to see that the ground is clear of noxious creatures, such as snakes, scorpions, and centipedes. If circumstances permit a man to get behind an undulation, and so guard against the wind, he will of course do so. Wherever practicable the boots should be taken off, and the feet covered in the blanket carried by the man. The face and ears should be covered at night. Officers will, of course, avoid bivouacking upon ground that had shortly before been similarly used. In looking out for a place to bivouac singly, bear in mind that a wall or other screen, 18 inches high, is sufficient to protect a man from the strength of a storm. Trees are delusive; they act as a shade, but not as a shelter; they rather make eddies of wind, rendering their presence objectionable on the ground for bivouac. Hillocks and undulations of the ground should be taken advantage of. Low-lying ground should, however, be avoided, and that slightly elevated selected. Avoid also the near neighbourhood of water, if possible, in whatever climate. In some cases—as in the sandy plains of Africa, India, and Australia—a man may make himself tolerably comfortable by "burying" himself pretty deeply in the surface sand at night, leaving his head clear. If a fire or embers of a camp-fire are obtainable, a man may, by bivouacking close to them, make himself tolerably comfortable. In all cases the body should have sufficient covering above, as well as below, if that be possible. In the retreat from Moscow, many a soldier saved his own life by bivouacking under the lee of a dead horse. If a man has not sufficient clothing to keep him warm in the

bivouac, his sufferings at night are often fearful. He should also remember that some protection between him and the ground is as necessary, or perhaps more so, than clothing over him, and make use of grass, twigs, and shrubs as a kind of mattress under him. A temporary shelter may be made by driving into the ground forked sticks four feet long, placing a pole between them, and resting branches against them on the windward side. When military considerations permit, fires should be lighted in circular clusters, and the men lie down between them. They should then lie in squads, spreading one or two blankets on the ground, or over straw if obtainable, the remaining blankets being spread over them. In wet or cold weather hot coffee should be issued to the men before they lie down to sleep, and not more than one-half of their numbers should do so at the same time. The application of oil or grease to the hands and face is a good protection against the effects of cold in bivouac.

BLISTERS ON THE FEET.—The best method of treating blisters on the feet is, if they have not broken, to run a fine needle and thread through them, so that the contents may be discharged, and then the skin will adhere to the raw surface underneath and so protect it. Those that have broken should be treated with a little suet or simple ointment on a piece of cloth, after the feet have been well bathed in warm water and dried. On starting afterwards on the march, the soldier should be careful that his sock is without holes in it, that it is properly put on his bad foot, and that the boot is soft. After a few days' march we hear no more of blistered feet.—*See* FEET. Another application to blistered feet consists of a mixture of spirits and melted tallow. This, if put on at night, is said to cure the blisters. To prevent them, apply soap to the inside of the sock, so as to make a lather, before starting on the march. A raw egg broken into the boot before putting it on very greatly softens the leather. A good plan also is after a march to change the socks, right to left and left to right, or turn them.

BLOOD, SPITTING OF.—This comes on with cough more or less severe, the expectoration or spittle being at first streaked with blood, but afterwards the blood following the cough in greater or smaller quantities, according to the severity of the attack. There is a feeling of oppression upon the chest. After each fit of coughing the blood is frothy and of a light red colour. The person has a feeling as if the desire to cough were situated deep in the chest. Breathing becomes difficult; there is a feeling of heat and tickling in the throat. This kind of illness must always be considered as very serious to the patient, it being in many cases the forerunner of incurable disease. The first thing to be done is to open the clothes of the man; lay him flat, bathe the chest with cold water, and if there be any vinegar in the barrack-room, to give him a little mixed with water. He should *be carried* to hospital; not made to walk.

BOOTS.—Much of the power of marching of a man depends upon the manner in which his boots are fitted. Too large a boot *frays* and injures the foot; too small a boot destroys it, and lays up the man. Certain allowance should be made, when trying on a boot, for the expanse of the foot in length and breadth while walking, and this is greater in a fleshy than a hard bony foot. For the purpose of real work the boots should be well greased, as well to render them waterproof as to keep them flexible. They should be well cleaned inside, if necessary. Should be so made as to fit tight—but not too tight—just in front of the instep, be broad in the heels, and at the toes.

BRUISES may be of any degree of severity, from what merely causes slight discolouration of the skin to that which destroys all feeling in the part. Such as are usually met with may be caused by blows, falls, kicks, &c. A very common seat of them is the parts around the eyes. The best immediate application is cold water, or water containing some spirits or vinegar. A thin piece of cloth should be soaked in either, and applied. Cold will be produced

by evaporation of the lotion, and this will check in some manner the effusion of blood. Severe bruises of the chest or belly may cause death by injury to the parts contained in these cavities respectively. A favourite application to those in the limbs or face is tincture of arnica; but spirits in any other form would be just as good.

BURNS AND SCALDS.—These injuries may be of all degrees of severity, from slight redness of the skin to complete destruction of the vitality of the injured part. Those indicated here, however, are the comparatively slight ones, such as occur by accidents about barracks; injuries of this kind, such as happen in battle by the explosion of mines, tumbrils, &c., being usually far more urgent in their nature. If a man has accidentally got burnt or scalded, let the injured part be freed from clothing as quickly as possible. If cold water is obtainable, throw some upon the part; or, in the case of a limb, let it be placed in a vessel full of it. If the surface is only reddened, or slightly blistered, this may be sufficient for the time being, or, if not, the part may be gently smeared with oil or grease, or dusted with flower. In the more severe cases, when the skin is swept clean off, the best kind of first dressing is carded cotton soaked in oil, or white of egg, or whitewash.

CAMP.—The straw or other material used for bedding in a standing camp should be changed as often as possible, irrespective of the *Regulations* upon the subject. Cleanliness within and without the tents should be carefully maintained; the committal of nuisance around them checked by the soldiers themselves. The slaughter yard and latrines should be as far as possible from the camp, and soldiers will understand the necessity of the whole force changing ground occasionally, and avoiding sites of previous camps. In some countries it is dangerous when pitching a camp to take off the surface of the ground, disease being often produced in this way. Hence it must be done cautiously, if at all. Men should avoid rushing out of the

tents at night half naked to go to the latrines. A chill thus produced may give rise to serious disease, dysentery more especially. They should be careful when encamped to have plenty of warm clothing; while asleep, to wear their flannel binders at night. They should take every opportunity of washing their linen. Whenever they can do so they will find it very refreshing to take their boots off before going to bed. For the sake of dividing work, the plan followed in the French Army is that 14 privates and 1 non-commissioned officer usually are told off to a tent. The privates are divided thus :—6 tent men, 2 water men, 1 cook, 3 for duty if required. Each man thus soon learns what he has to do, and should do it. On arriving in camp, if the men are hot they should not take off their coats too soon; when the tents are pitched, then is the time for them to change their underclothing, dry and brush what has been worn, and make their own ablutions. The maintenance of cleanliness in camp is necessary for the well-being of all. Hence, all good officers are very strict in regard to this matter, and soldiers should for their own sakes be equally particular.

Camp Requisites for Officers.—The following is a list of articles to be taken as equipment by officers going on service, or to the *Manœuvres*, now becoming a regular part of military training. The list is taken partly from Sir G. Worlesley's Soldiers' Pocket-book, partly from lists of outfitters, viz.: *To be worn on the person*—Shako, tunic, trousers, shooting boots, socks (woollen), drawers, flannel shirt, silk pocket handkerchief, gaiters, clasp-knife, drinking-cup and water-bottle, telescope and compass attached to it, watch, waterproof coat and havresac.

To be carried in the valise, according to Horse Guards' pattern, itself forming a bed :—1 great coat, 1 blanket, 1 pair of trousers, 1 pair shooting boots, 6 pairs boot laces, 2 pairs of worsted socks, 1 pair drawers, 1 flannel shirt, 1 silk pocket handkerchief, 1 woollen nightcap, 1 holdall—containing 1 comb, 1 hair-brush, 1 tooth-brush, 1 pair scissors, 1 soap box, 1 small sponge, 1 clothes'-brush, 1

housewife, 1 tin of dubbing, 1 portfolio, with pen, ink, and paper, 1 journal-book, 1 cholera belt, 1 calico bandage, 1 candle lamp and candles (these are put up together by outfitters), 1 tin match-box, 2 tin plates, 1 cup in leather bag, containing knife, fork, spoon, pepper and salt pots, a map of the country, and an india-rubber basin. These and the valise weigh about 40 lbs.

As furniture, he should have 1 bedstead, 12 lbs.; air pillow, ½ lb.; bath and sponge bag, 2 lbs.; wash-hand stand, 2 lbs.; bucket, 9 ozs.; camp stool, 8 ozs.; lantern and box of candles, 1 to 4 lbs., unless these be in the valise kit. Total, 29 lbs. 14 ozs., according to the list printed at Aldershot.

Canteen for cooking, if each officer carries his own knife, fork, and spoon,—1 camp kettle, cover and strap, tripod, boiling-pot and cover, stew-pan and cover, sugar canister, tea, coffee, butter, tin canister containing pepper box, mustard pot, and salt cellar; 2 saucepans, frypan, gridiron cook's knife, fork, and iron spoon, tea kettle. All these weigh 17 lbs. 7 oz.; fit one within the other, and are secured by a strap around the whole.

The following is a list of clothing used by the men of the *Red River Expedition,* viz. :—*On the person*—1 flannel shirt, 1 pair woollen socks, 1 pair buff moccasins, 1 forage cap, peak and cover, 1 serge frock with pockets, 1 pair serge trousers, 1 havresac, 1 clasp knife, 1 tin cup, 1 waist belt, 1 mess tin, 1 great coat (both these in the pack). *In the pack*,—1 flannel shirt, 2 pairs woollen socks, 1 pair ammunition boots, 1 thick woollen night cap, 1 towel, 1 piece of soap, 1 brush (clothes or boot), 1 comb, 1 linen bandage, 1 small book, 1 housewife, knife, fork, and spoon.

CAMPAIGNING, *see* SERVICE.

CATARRH OR COMMON COLD.—Men who are exposed to vicissitudes of weather and season, as soldiers necessarily are, suffer considerably from these affections. As precautions, they should wear plenty of warm clothing, avoid re-

maining in wet garments if possible, and endeavour to go on duty undebilitated by debauch. If attacked with *a cold,* let the subject of it take plenty of hot drinks, place his feet in warm water, and go to bed, unless he has it in his power to proceed direct to hospital. Catarrh, if neglected, is apt to end in one or other of the severe affections of the chest, as bronchitis or pneumonia, either of which is difficult to be got rid of, and may endanger life. As to "working off" a cold, this is only possible when the attack is a slight one.

CARRYING A SICK OR WOUNDED COMRADE.—*Stretchers* are usually provided in every regiment for the purpose. In laying a sick or injured man upon one, care should be taken that he is placed in a position or attitude to give him the greatest measure of comfort under the circumstances. As a rule he is best placed upon his back, his limbs stretched out straight, unless actually displaced by the wound or accident; but there should always be a pillow under his head, and his neck and chest should be left free by the coat being unbuttoned. In cases of accident or sudden illness, the great mistake made by soldiers is to be too hurried; another, in being *too rough.* The person should be laid gently upon the stretcher; his head, arms, and feet all supported upon it, instead of dangling from it; one man at either end should then raise it gently, the one at the *foot* end with his *back* to the patient, and then should move off slowly with *a broken* step, so as to avoid shaking the sufferer. A comrade at either side may, with one hand, support the middle of each pole of the stretcher.—*See Stretchers.*

CHAFING.—Some men suffer from chafing between the thighs when on the march, and others from what is commonly known as *losing leather* from riding. Good-fitting drawers, of cotton or other soft material, are good preservatives against such accidents. When they do occur, the parts should be moistened with oil or grease, kept tho-

roughly clean, and after the march is over, and ablutions performed, dusted with flour, starch, or other absorbent powder.

CHAPPED HANDS OR FACE.—This is one of the common effects of cold. It is always more or less disagreeable; but in the case of the hands particularly so, bleeding often taking place from cracks in the skin over the points. It may or may not be attended by chilblains. Generally, however, it is so. The best preventatives consist of spirits and oil freely rubbed in morning and evening, gloves, especially leather gloves, being worn throughout the day. A thin leather glove underneath, with woollen or other gloves outside, form the best preservative of warmth for the hand, and consequent preventative of *chaps*.

CHARCOAL.—There is danger of a man being poisoned by the vapours of burning charcoal if he permits himself to go to sleep in a room where a vessel containing this kind of fuel is *alight*. To avoid this accident it is necessary that the flame should have entirely ceased before the person settles down to rest; at the same time it is necessary to remember that the quantity of *carbonic acid*, or the poisonous gas given out, is less when the flame is bright than when it is beginning to burn or is nearly extinguished. To recover a person from the effects of this gas, let him be exposed to the fresh air, bathe the head and face with water or water and vinegar. If he is unconscious, lay him upon the ground, raise his head, sponge his face and chest with vinegar and water, rub the arms and legs, apply hartshorn fumes to the nostrils, or tickle them and the mouth with a feather. When recovery begins, place him in a warm bed, and give a little stimulant.—*See* COAL.

CHEESE.—This for the soldier is both agreeable to the taste and useful as a supplementary article of diet, and, as a rule, forms, with biscuit or bread, a favourite "snack" at the regimental canteen. On the march it is always advis-

able, whenever there is a probability of delay in the issue of regular rations, to have a small piece of cheese. This is partly provided for by *Regulations;* but soldiers would do well to look after themselves in this as in a good many other respects.

CHILBLAINS.—These take place at the beginning of winter, usually on parts that had previously suffered from cold. They occur in the form of painful and inflamed tumours of greater or less extent upon the hands, feet, or ears, and are, in reality, but mild forms of *frost-bite.* When they begin to take place, and before being "broken," apply a little camphor and oil to them, wear very warm socks and gloves, and use active exercise. When chilblains are severe, or have formed ulcers, the soldier should consult his medical officer. These affections, although generally without any particular danger, ought by no means to be neglected, as they sometimes degenerate into painful and obstinate ulcers.

CHOKING.—If a foreign substance, as a piece of meat, &c., be retained in the throat, proceed thus:—Strike the back, endeavour to provoke sneezing, try to provoke vomiting by introducing into the throat a feather smeared in oil. If a bone be the object stuck, endeavour to get it swallowed, as by giving a morsel of bread-crumb or drinking a quantity of water. Another plan is to extend the tongue, place upon it a piece of tobacco or other irritating substance, so that by causing motion in it and inducing an attempt at vomiting the foreign body may sometimes be dislodged and thrown out. By poking the finger into the throat, unless care be taken, more harm than good is likely to be done. The man should be taken to hospital without delay.

CHOLERA (*see also* EPIDEMICS).—When this scourge is anticipated, and during its prevalence, the best exertions of the higher authorities, as well as of the regimental officers, are directed to its aversion, if possible, or, at all events, to its

mitigation. Many of the measures taken are in their nature beyond the means of the generality of soldiers to comprehend fully; but others are quite within their knowledge, and, in fact, their success depends in a great measure upon the co-operation and good sense of the men themselves. They can understand that by change of locality, by good ventilation, the separation of patients attacked from others in hospital, and the breaking-up of regiments into various portions, all being sent away in different directions, all that is possible is thus done to prevent the spread of this disease, one of the peculiarities of which is that it clings to masses of people crowded together, whether they be so in camps, barracks, or cities. They can also readily understand how necessary it is to avoid panic, to refrain from excesses which, in reality, increase liability to attack, and diminish the chances of recovery of those attacked; also that they should wear their flannel belts, be on the alert to take, if attacked with diarrhœa, some of the medicine which, under such circumstances, the surgeon has sent to the non-commissioned officers for distribution, as well as how necessary it is that they should be taken to hospital at the very earliest possible moment after the seizure. The most frequent time for attack is towards morning.

CLEANLINESS is absolutely indispensable to health, whether of the individual or the mass. It is, if possible. even more so on the march and bivouac than in barracks. Under all circumstances the hands, face, neck, and upper part of the chest should be washed with cold water, the teeth brushed with a hard brush, the hair combed and brushed. Cleanliness of the mouth cannot be too much insisted upon, not only for the comfort of the man himself, but for that of his comrades right and left of him. This precaution is by no means attended to as it should be; but considering what an offensive and injurious thing a foul breath is, surely the propriety of averting it as far as possible is self-evident. The feet should be carefully washed as often as possible. On the march or active service this

is, if possible, more necessary than in quarters. The nails of the fingers and toes should be trimmed once a week, those of the latter, especially of the great toes, being cut *square*, by which means in-growing of the corner into the flesh may best be guarded against.

But although under ordinary circumstances absolute cleanliness is necessary for health, and will be insisted upon by the responsible officers, there are conditions connected with military service where limitations must exist in this respect, as, for example, in very cold climates and in very inclement weather. In a temperate climate cleanliness must be insisted upon. In barracks the air becomes foul to a fearful degree if this is neglected; the mass of men become unhealthy, and diseases such as arise from *overcrowding* occur. Cleanliness of his person, cleanliness as regards his surroundings, must be looked upon as constituting, in ordinary times, the great safeguards of the health of the soldier.

CLIMATE.—The soldier must be prepared to serve in all climates,—those that are extreme, those that are hot, cold, dry, or damp. It is not to be denied that "climate" exerts a very great influence upon the health and constitution. Animals and plants transported to climates different from that of their own native country suffer in quite an equal extent to what man does. No doubt man has it in his power by suitable arrangements to modify, to a certain extent, the effects of climate; but on the other hand, by neglecting those arrangements, and what is still worse, by running into excesses and indiscretions such as would have a pernicious influence even in his own country, he increases the risks of injury to health, and perhaps death, to which he is exposed. Whether a man may after a time become *accustomed* to particular climates is another matter; but unless care, with moderation and temperance, be observed, life will certainly not be sufficiently prolonged to give the *experiment* a fair chance of succeeding.

When a soldier arrives for the first time in a hot climate he should be careful to regulate his conduct. He should expose himself as little as possible, be moderate as regards food and drink, avoid exciting drinks in considerable quantity, be careful in the use of native fruits, wear loosely-made clothes, and, if the atmosphere be moist, use such as are made of woollen material. Abundant sleep is desirable, and bathing should be regularly practised.

CLOTHING.—The dress of the soldier is determined by *regulation.* Nevertheless, it is well known that during autumn and winter, in mountainous countries and on the line of march, it is right to dress in woollen clothes, whatever be the state of or kind of weather, on account of the changes that may occur in it. This rule is also more or less applicable to hot countries or those of extreme climates, such as some parts of India and China. In these the body clothes best suited for all purposes are those that consist of thin woollen material. During great heat cotton trousers are perhaps most suitable. The French troops in Algeria find cotton or linen trousers agreeable, as our own do in hot countries. Clothes should be changed whenever they become wet. This precaution is absolutely essential, in order to avoid evil results. An immensity of evil is done by having the collar of the tunic too tight; this impedes the circulation of the blood, and becomes a source of disease of the heart. So also, the trousers, if too tight round the waist, interfere with the soldier in his drill, especially when kneeling, and suddenly getting up again, sometimes giving rise to *rupture.* Woollen articles of clothing should be often exposed to the air, and beaten, so as to free them from dust; the trousers and tunics turned inside out, especially after a march or drill, when they are perhaps tainted with perspiration. When ordered on service, the articles of clothing of all kinds should be new, or as nearly new as the man can manage to have them. This the officers will doubtless see to.—*See* DRAWERS.

Soldiers should guard against insufficient clothing in

cold or wet climates; nor should they be in a hurry to leave off those worn in winter on the approach of summer. They can always make use of old tunics to make them into vests for winter wear. The older the soldier, or the more he has suffered from illness, especially abroad, the greater care he requires to pay to his clothing, that it be warm and commodious. The young and robust need less clothing than the older and more feeble; nevertheless, they require much more care in this respect than they often take; but, under all circumstances, that worn should be sufficient to prevent the person from suffering from rapid and great changes of weather or season.

To Dry Wet Clothes on Service.—Make a dome-shaped framework of twigs by bending each twig inward into a half circle, and planting both ends of it in the ground. A smouldering fire having been made inside this dome, lay the clothes over the framework. This is convenient, if other means than wind and sun are needed, but usually all that is required is to hang the clothes upon trees or shrubs, where they may be freely exposed to the breeze. This plan is generally followed by travellers and explorers, and may easily be adopted by soldiers in the field.

Coal, Vapour of.—The vapour of a coal fire when left in a room where men sleep is only less dangerous to life than that from charcoal, because the gases mixed in it, including sulphurous acid, sulphuretted and carburetted hydrogen, are of themselves so irritating as to give warning of their presence by causing sneezing. Nevertheless, if actual loss of life does not occur from the presence of coal vapour in rooms, headache, feverishness, and other unpleasant results arise, to guard against which all that is required is to see that fires are completely extinguished in the rooms before you go to bed. To recover from the effects of vapour of this kind, take a walk in the open air, bathe the head and body in *cold* water.—*See* Charcoal.

COLD.—If a soldier is found *benumbed* from cold, remove him to an unheated room; open the windows; rub the body and limbs with cold water; practice artificial respiration as in cases of *drowning;* then place him in a bed, and when he begins to revive give him a little warm tea. The application of hot bottles to the person should be avoided; nor should a fire be lighted in the room. In order to protect the body against the cold of the weather, the evident plan is to use plenty of woollen clothing, including stockings. A plan recommended in France is to have two cotton shirts, one over the other, flannel being still worn next the skin.—*See also* CATARRH.

COLIC.—Severe twisting pain in the belly without diarrhœa. Apply cloths wrung out of hot water to the stomach, taking care that they are not so hot as to blister. Give hot drinks, with any aromatic, as cinnamon, &c., that is readily available, while arrangements are being made to send the man affected to hospital. The affection is usually caused by having the feet wet and neglecting to change the socks, or by exposure to a current of damp or cold wind with the *stomach* insufficiently clothed.

CONDUCT.—A man's personal conduct has very great influence upon his own health, for good or for bad, and often affects that of his comrades also. Thus, he who leads a regular and temperate life, avoiding public-houses, brothels, and other places where vice and disease are usually met with, is surely more likely to be unaffected by either than the reckless or thoughtless man who frequents both, and indulges in their so-called "pleasures." A soldier should remember that as such, *discipline* requires that he exert command over himself, and this accordingly he must learn to do. If respectful to his superiors and yielding willing obedience, he will be kindly treated by all, whereas if disrespectful and obstinate he will find his life by no means a happy one. Every soldier should, as soon as possible, make himself acquainted with the *orders*

and *regulations* according to which he is now to be treated, and learn to accommodate himself to them.

CONVALESCENCE.—Medical officers prescribe the regimen to be followed during convalescence from illness; nevertheless there are some points that are altogether influenced by the soldier himself, and it is well that his attention should be directed to them. It is essential that instructions given by the surgeon be rigidly followed. It will be well for a man to consider what have been the causes of his illness, and thus learn how for the future they are to be best avoided. Probably, there will be few who may not find something to correct or avoid in their manner of life, their food, drink, regulation of their desires and passions, and so on.

COOKING.—Whether it is or is not necessary in India and some other countries similarly situated in this respect that soldiers should all have a practical knowledge of the art of cooking, it is essential for the requirements of war against an enemy in Europe that each should be able to manage for himself. This was demonstrated over and over again during the Franco-German war. The mess-tin may always be used for this purpose, and on service, the readiest and perhaps the best plan of preparing food is to stew the meat with such vegetables as are issued, and with a little seasoning, which can generally be obtained. If time does not admit of this, the meat may be broiled, and to do this the French troops in Algeria used to make temporary gridirons of their ramrods, but the latter being now abolished, men must obtain what other means they can. The French believe that meat is more wholesome when stewed or cooked as broth than when roasted. They consider that the use of roasted or broiled meat on the march or on service causes dysentery and other diseases of the bowels, as happened during the expedition to Russia in 1812.

See Queen's Regulations, on the subject of COOKING.

The process of cooking meat ought always to be com-

plete. Underdone meat is to many persons offensive and indigestible, and its use renders all liable to become affected by TAPE-WORM, the germs of which are in such a case not deprived of their vitality. Certain kinds of sausages and meat, unless well cooked, are liable to cause disease of a severe nature. In fact, no kind of *meat* ought to be eaten in an uncooked state.

CORNS ON THE FEET are, for the most part, caused by wearing too tight or too hard boots. There are persons, however, who are subject to them whether their boots be large or small, and are rendered thereby hardly able to march. The corns may take place upon the more prominent parts of the foot, or between the toes; in the latter, as *soft* corns. To relieve them as much as possible, bathe the feet well in warm water, then with a sharp knife cut off as much as can safely be done. For the soft ones, apply some carded cotton soaked in oil. A good plan is, after they are cut and the surface is still moist, to rub the surface gently with *caustic* (nitrate of silver) taking care that this is not done to too great an extent, as, in that case, the parts will become blistered. A thin crust will form on the surface, and by repeating the application every three days or so, not only will the pain be rendered less, but will be easy to take off the crust by means of the nail, and with it, often the "*core*."

COUGH.—The fact of a man suffering from cough for some time indicates the existence of mischief in the wind-pipe or chest, for the removal of which medical treatment is absolutely necessary. Cough in the early morning, especially if attended by expectoration of pellet-like masses of matter, indicates liability to consumption, if not, indeed, the beginning of that disease. If the *pellets* expectorated are streaked with blood, the symptom is always of a serious nature. Under no circumstances should the existence of cough be neglected. Even when it is habitual, or confined to the winter season, it requires to be attended to

and treated. Unless it be so, it will sooner or later end in serious danger to the sufferer.

CROWDING.—The regulations of the service make very definite arrangements so as to prevent too great a number of men being placed together in the same barrack-room. It is, nevertheless, well that the soldiers should themselves know that to the practice of overcrowding, such as it used to prevail, was due the fearful extent to which *typhus* fever raged in our army, and that to the modern and improved arrangements in this and other respects we can attribute the absolute extinction of that, as well as some other diseases among them. Still, there are evils which are more or less inseparable from the fact of considerable bodies of men occupying the same room, the risks arising from this circumstance being increased by the practice of huddling together, more especially if ventilation and personal cleanliness be neglected. Of these evils, pulmonary consumption is a principal; headaches, sickness, faintness, and loss of strength, are among the other effects. The men should, therefore, avoid bringing their bedsteads nearer each other than the regulated distance between them, namely, a foot and a half to two feet in barracks, and one and a half in huts. They should also remember that although the *cubic* measurements be sufficient according to official measurement, yet unless the superficial space be also good, injury to the health of individuals will be the result. Another point to bear in mind is, that wherever persons are crowded together, there, epidemics when they occur prevail with greatest intensity.

CUMMURBUNDS.—*See* BELTS.—These have been found of the greatest service by the French in Algeria and by our troops in India during the Sepoy mutiny. They protect the loins against the effects of the sun, and guard the stomach against chills. The long kind of cloth such as that made for the purpose is best suited for it. The *cummurbund* to be worn during the day, the flannel belt at

night. On home service, and in temperate climates generally, the regulations in force prevent the wearing of anything in the shape of a *cummurbund* outside the uniform; on actual service, however, these regulations no doubt would be relaxed, and whenever they are so, soldiers will derive the greatest advantage from adopting the precaution of thus protecting the loins and "stomach."

CUTS.—*See* WOUNDS BY SWORDS.—In cases of accidental cuts, such as soldiers meet with in barracks, the first thing to be done is to press the cut surfaces together to prevent the bleeding that would otherwise take place. In the case of a hand or superficial wound in a limb, this may be all that is needed. In such a case a few turns of a bandage rolled round the part may be all that is required. The cloth gets soaked with the oozing blood, then dry so as to form a crust, and thus prevents access of air to the wound, which will heal rapidly. If the wound is of a more serious nature so as to open a blood-vessel, the flow of blood will speedily indicate its actual nature. The shortest way in such a case is for a comrade to grasp the part as tightly as he can, and maintain his hold until the arrival of a surgeon.

DEATH.—Under ordinary circumstances the proportion of men per regiment who die naturally is tolerably constant. It varies, however, according to conditions and station, and is altogether placed beyond regular calculation by the occurrence of *Epidemics*. As a rule, the death-rate from all causes amounts to about 20 per 1,000 annually of the troops on home service; on foreign stations it is considerably more, besides the numbers who every year become unfit for service, and are *invalided*. Soldiers should study these matters, as so much depends upon themselves as regards the diminution of the death-rates in regiments.

DIARRHŒA.—Use hot drinks whether of gruel, tea, or rice water; keep the stomach and feet warm. Hot soup is

very grateful until the sufferer can be taken to hospital. If a little ginger, cinnamon, or oil of peppermint, a small pinch or a few drops should be added to the hot drink. The French are fond of using a weak infusion of camomile against diarrhœa, and often cultivate the plant for the purpose. It does not grow, however, in many places to which British soldiers are sent, but there are always bitter and aromatic plants such as are used by the natives of different countries, and the employment of which often keep off this as well as other diseases. The application to the stomach of a hot brick rolled up in a blanket or other woollen cloth is beneficial as well as grateful. Perfect rest should be observed, and unless the person attacked can be taken to hospital or otherwise prescribed for, he ought to remain in bed.

DIGESTION.—The process of digestion proceeds best when a man has it in his power to remain at rest for some time after a meal, or at most if the exercise be moderate, as in walking. In fact, a man is incapable of very violent exercise while digestion is going on, fullness of the head and sickness being often caused by it. Exercise and an active life, however, if taken at suitable times, and then rest immediately after meals, increase both the appetite and power of digestion. The time required for the complete digestion of various kinds of food depends upon their nature. For soldiers it will be sufficient to know that beef and mutton require three to four hours, salt beef four and a half, potatoes and bread about three.

DISEASE.—*See also* SICKNESS.—*Concealment* of disease is a military offence and insures liability to punishment. Irrespective of that, however, the soldier should bear in mind that disease in a general sense is most readily curable in the early stages, and that in some cases, if once it obtains full possession of the system, its effects never can be got rid of, but slowly and painfully drag him down to death. This is especially the case with the class well known to soldiers

as "*the disease.*" Sores upon the body, disfigurement, painful affections of the joints and bones, are its immediate results. If ever a man who has once suffered constitutionally from it marries, the chances are that his children will be diseased also. Hence surely he ought, when unfortunate enough to become affected, to take the very earliest opportunity of consulting the surgeon instead of *quacking*, or altogether neglecting himself, as is often done, until the mischief now indicated has taken place, There are certain *diseases* incidental to *Service*, such as typhus fever, dysentery, cholera, scurvy, &c., against all of which the medical officers take steps for protecting the men; yet unless the soldiers themselves are careful, the efforts of others will more or less fail. In campaigns it often happens that the deaths by disease are as 7 or 8 to one, as compared with the losses in battle and by wounds. Hence the necessity of men guarding against illness is evident.

DISINFECTANTS.—As a rule it may be said of disinfectants that their use would be unnecessary were perfect cleanliness observed. In some instances they become necessary as a temporary means of destroying emanations that might otherwise prove injurious, and which arise in consequence of defects in drains, &c. Soldiers should know, however, that where disinfectants are needed cleanliness has not been attended to as it ought to have been, and that probably the fault rests with themselves or their predecessors in the same barracks. The *disinfectants* allowed by Regulation are *lime* and *carbolic acid.* The former is often ineffectual, and when used for latrines and urinals, after a time renders matters worse than they were before; the latter is only useful for destroying "organic" matters, not for *inorganic*, as sulphuretted hydrogen and ammonia arising from sewers and latrines. For *disinfecting* purposes chlorine gas and carbolic acid are those best adapted. The former is produced by pouring a little sulphuric acid upon common table salt in a saucer.

DISLOCATIONS.—These imply the unnatural separation or displacement of the bones forming a joint. They are usually caused by a blow or fall, and can be at once recognised by the fact of the joint affected being thrown out of its natural shape, and being more or less completely immovable. The nature of the accident is recognised by the existence of pain, difficulty of moving the part, deformity, displacement or change of direction of the bones, lengthening or shortening of the joint. Sometimes there is so much swelling as to render it difficult for a surgeon to detect the actual nature of the injury. All that can be done is to place the limb in the most comfortable position possible until the sufferer is carried to hospital, supporting the part if need be by pillows, or by the hands of comrades.—*See* FRACTURES.

DRAGOONS, WEIGHT OF.—The average net weight of a dragoon is about 11½ stone, of a lancer 11 stone, of a hussar 10 stone, 3 lbs. That of their dress, arms, accoutrements, ammunition, and equipment worn on the person, is respectively about 31 lbs. 6 oz., 32 lbs. 4 oz., and 31 lbs. 14 oz. Adding the weight of the water-bottle full, 2 lbs. 4 oz., and 2 days' rations for the man, 4 lbs., the total weight carried by the horses of our cavalry is—Heavies, 19 st. 2 lbs.; Lancers, 18 st. 10 lbs.; Hussars, 17 st. 13 lbs.; to these weights must be added one day's corn for the horse (Wolseley). There are particular kinds of diseases to which a dragoon is more liable than an infantry soldier. Of these, ruptures, swelled testicle, and strains of the muscles of the thigh are the most frequent. To guard against the second named the use of *suspensors* is recommended. It has been said that *hæmorrhoids* are more frequent in the mounted than in the unmounted branches, but statistics do not support this belief.

DRAWERS.—Although not in the list of *necessaries* of a soldier, they not only afford great comfort when worn, but are necessary in order to maintain cleanliness. Rough

woollen trowsers, if worn without drawers, not only fret and irritate the limbs and "fork," but soon become offensively dirty, and in consequence unwholesome. In hot countries drawers of *long* cloth are the most comfortable; in temperate and cold climates those of *wove* cloth or lamb's wool are the best suited for use. Drawers do form part of the kit of the French soldier, and they ought certainly to be used by those of the English army. Soldiers would soon find how greatly they enhance their individual comfort.

DRILLS.—The plan followed in India of giving coffee and biscuit to each man before going to morning drill is absolutely essential to health there, but should be adopted elsewhere when men have to parade before breakfast. Soldiers should know that early drills ensure early hours, and some degree of sobriety the previous night; hence indeed their chief use. Officers do know that the shorter the drill the more attention is paid to it by the men; the longer and more frequent, the more irksome. It is a necessity of the drills that they involve constrained positions on the part of the soldier. The more speedily the man accommodates himself to what is unavoidable the better it will be in all respects for himself. Some men have a greater aptitude than others in learning this part of their duties. So it is with all other occupations in life. Patience on their own part and that of their teachers, will not only succeed better than hastiness and irritation, but the health of the recruit will thus the better be secured, for many young men *break down* completely in the course of their drill. The periods of the day at which drills should take place depend upon climate and season. In hot countries and seasons early morning is the best time for them; in cold and winter, the middle of the day.

DRINKS.—Undoubtedly the best *drink* for all purposes is water. It is, however, neither sufficiently pungent or potent for the generality of soldiers; consequently is seldom

used when other descriptions can be got. Effervescing drinks, as soda water, lemonade, ginger beer, &c., are very agreeable, and when properly made, wholesome. So also are *sherbets* of different kinds, as those of lemons, tamarinds, &c., in hot countries. Tea and coffee are excellent. Cold tea the best of all to work upon and undergo fatigue. Wines are little relished by British soldiers, and are moreover expensive; otherwise light kinds are well adapted for hot climates. Unhappily, beer and spirits are the favourite drinks in our army, further remarks regarding both being made under their respective heads.

DROWNING.—Undress, then extend the person upon the ground, laying him slightly upon the right side; raise the head gently; cover the body, if possible, with a warm and dry blanket; apply a hand to each side over the short ribs; gently press, then relax, then press again, and so on, so as to produce a movement of the ribs and chest as nearly as possible like that of natural breathing; the hand of a man being at the same time gently applied to the belly. While this is being done, gently, steadily, and perseveringly, a second man should, if possible, rub with a piece of flannel over the spine of the back. The nostrils should meantime be tickled with a feather. It is useless to pour spirits into the mouth until breathing has become restored. The case should not be given up as hopeless, until pronounced so by the surgeon, who should at once be sent for. It is, of course, necessary in handling the man, to avoid injuring him. Wipe carefully mud and slime from the mouth and nostrils. It may be well at first to place him on his stomach, with the head on a lower level than the body, so that water may be permitted to escape from the mouth; but it is dangerous to the man's life to suspend him with the head directly downwards, as is sometimes recommended by ignorant people.

To Save a Man from Drowning in the Surf.—If he is being washed backwards and forwards by the waves his comrades may save him by holding firmly together, each having

hold of the hand of the other, and so forming a line down to the sea, the nearest one laying hold of the drowning man as he is washed up to him, and holding him until the wave recedes, when he is to be drawn on shore before the next comes in. Strength and steadiness are needed to do this.

DRUNKENNESS.—It is surely unnecessary to point out to the soldier that the vice of drunkenness is not only unmanly in itself, but that it exposes its victim to a great many causes of injury to health and character. He who "takes to drink" because he has got into trouble or misfortune, is invariably a *coward*, inasmuch as he prefers to benumb and destroy his senses rather than face his difficulties like a man. Not only are the greater number of crimes attended by violence in the army committed as direct results of drunkenness, but men in this state are those who mostly meet with accidents, including fractures and dislocations; who become the subjects of *contagious* diseases, and thus are not only rendered unfit for military duty, but their disability not being attributable to service, are discharged, it may be with little or no pension, broken in health, unable to earn their own living, and with only the alternative of a prison or a poor-house before them. Literally, and truly, a confirmed drunkard is a worse and more dangerous animal than are the brute beasts. Every soldier knows that it is not necessary that a man should be so many times in an actual state of *intoxication* to constitute himself a drunkard. He who drinks most steadily is not by any means the one to be oftenest in a state of actual drunkenness. He is, however, at all times more or less under its effects; if hurt or sick, has a much worse chance of recovery than his sober comrades, and sooner or later gets *delirium tremens*, or becomes affected with disease of the liver or kidneys. All these evils, although existing in a temperate climate, prevail with double force in tropical countries; notably so in India, China, and the West Indies. —*See* INTOXICATION.

DUTY.—*See also* GUARD.—In times of peace the *duties* of a soldier include his drills, parades, sentry or guard, picket, orderly; and so on. In times of war they are, of course, more arduous and at the same time more dangerous. There are then advanced and rear guards, it may be, duty in the trenches, and those directly against the enemy. In all cases it is necessary for a man's health that he have a good meal just before going on the particular duty; that his clothing be good and sufficient, and that he have means of keeping himself dry. If a man after a debauch goes upon severe duty, the chances are that he will be unfit for its performance, and that he will break down in his own health. Men should, as a matter of course, be permitted to perform the duties required of them with the least possible way, and without others being *tacked on.*

DYSENTERY is a frequent and fatal disease in damp hot climates, and in what are called "malarious" localities. In India, especially during and immediately after the rainy season, soldiers are very liable to its attacks. In temperate climates its virulence is comparatively rare, and its severity inconsiderable as compared to what they are abroad. So soon as a soldier is attacked with severe pain, increased on pressure, in the bowels, a feeling of weight and coldness there, frequent and ineffectual desire to go to the *rear,* he had better take hot drinks, as tea, apply hot fomentations, or a hot bottle, rolled in flannel to his stomach, and "report himself sick." Spirits are of no use in such cases. A little hot ginger or peppermint tea will give temporary relief, but the man must place himself without delay under regular medical treatment. Dysentery in the tropics is truly a fearful disease.

EARACHE.—This is a very common affection among soldiers, both at home and abroad. It is said to be caused in India by the use of punkahs and thermantodotes in barrack-rooms, and indeed, there are many persons, soldiers and others, who are unable to bear the use of either, even in the

hottest weather. Earache is nothing more than inflammation of the inner parts of the ear, and requires to be treated like all other inflammations, that is, by hot fomentations and poultices. A man ought to apply one or other at once, or hold his face over the steam of hot water. The popular remedy of putting a piece of hot onion into the ear acts in the same way. The affection is a very painful one, and the person attacked with it had better report himself as soon as possible to the surgeon.

EDUCATION.—It is self-evident that the educated man has in many respects an advantage over the uneducated. This is so in all positions of life, but especially so in the army. In all nations, education of soldiers is looked upon as an important item in what constitutes military force, the soldiers who have sufficient learning to comprehend the object of particular movements and dispositions being obviously more likely to carry these out well, than those who merely obey orders mechanically, like so many machines. But education teaches, or ought to teach a man, not only his duty to his military superiors, but to his comrades and himself. It teaches him that there are other and greater pleasures to be attained than such as are of a mere bodily or material nature, and at the same time it affords the means of attaining them. What between schools and libraries provided for the soldier by Government, those who neglect to avail themselves of the benefits they are capable of affording have only themselves to blame. It has been well said, that "ignorance is the mother of error." Error thus arises in all that concerns a man, alike in relation to his bodily and moral state.

EMBARKING.—Full instructions in regard to the routine to be observed when troops are embarking for foreign service are contained in official *Regulations*. The duties which concern the health of the men include a careful inspection by medical officers, so that no person labouring under disease of an infectious nature shall proceed on board, that

sick and weakly men be left behind, and, in fact, that none proceed except such as promise to be in every way efficient for active or other service on reaching their destination. This is necessary for the interests of the men themselves, as well as for those of the public service. Soldiers when about to embark should carefully avoid excess, or localities where disease is rife, and where they may receive the germs of maladies that may give rise to much suffering and danger to life, not only during the sea passage, but after arriving in the country to which they are proceeding. It is necessary that men be amply provided with clothing and other requirements before embarking, but their officers will see that they are so.

EMETIC.—Sometimes a man feels that he requires an emetic. He has taken some article of food that disagrees with him, or perhaps swallowed by accident a morsel that is "high," or otherwise offensive. He may have an illness coming on, the first indication of which is a desire to get rid of the contents of the stomach. The simplest plan for so doing is to introduce one's own finger, or, better still, a feather, into the mouth, and so tickle the throat. Many persons have more or less the power to make efforts themselves to empty the stomach. By drinking a number of glasses of warm water, one after another, vomiting will be produced, and by continuing to do so the stomach may be thoroughly and completely cleared out. This is the best method to adopt, and the proceeding should be persisted in till the end is gained.

ENDEMICS.—Particular localities and climates have their peculiar *endemic* diseases, against each of which it is necessary to adopt precautions. In the United Kingdom, consumption and other diseases of the lungs, and rheumatism; in India, cholera, liver, and dysentery; in the West Indies, yellow fever; and so on. In all their habits and manner of life, it would be well for soldiers if they considered what are the particular diseases they have most to guard against

under the varying conditions of their service. In this way they would be the more likely to avoid them, and thus render the havoc caused in their ranks by *endemic* or climatorial disease fewer by far than they have hitherto been.

EPIDEMICS.—When these are raging, whether as cholera, yellow fever, or in other form, the best chance of escaping their onslaught is by being perfectly *clean* in person and sober in habits. Not that any human means known will always secure exemption from attack, but experience has amply shown that epidemics localise themselves and become intensified wherever filth prevails; persons weakened by debauch are thereby rendered doubly liable to attack, and when attacked have less chance of *pulling* through and making a complete recovery than those of more temperate and regular habits. The practice of drinking heavily "to keep off infection," so far from being beneficial, increases the liability to attack. The best plan is to make no change in the habits as regards food or drink, presuming them to be moderate, and to keep the mind and body, as far as possible, occupied. Men should never go upon duty while fasting.

EPILEPSY, OR FALLING SICKNESS.—A man is seized with an epileptic fit in the barrack-room. His comrades should take steps to prevent him from injuring himself during the convulsions which attend his fit. Open his clothes. Let him be placed in bed, upon his back, with chest and head a little raised. Sprinkle the face with cold water. When the fit is over, let the man sleep for a little; then be carried to hospital. The practice of forcibly restraining the limbs of a person in "a fit," ostensibly to prevent him from injuring himself, is improper, and often leads to the very evils it is meant to avert, dislocations of the joints and fractures of the bones being sometimes caused by it. The limbs should certainly be guarded, but so lightly and gently as to avoid the danger indicated. Sometimes the man affected threatens to bite his tongue or actually does so. It is best prevented by getting a roll of towel between his teeth.

EXERCISES.—These should be of duration and kind in proportion to the strength and capability of the individual. If necessarily violent they should be of short duration, and separated by time for complete repose. They are best undertaken in the morning and evening during summer; in the middle of the day during winter. The more a soldier is kept actively employed the better fitted for war he remains, and the more healthy he is. After confinement in barracks or elsewhere, where the air is tainted, free exercise, by exciting the circulation and breathing, is best suited to enable him to *throw off* any evil effects that might afterwards arise. Walking, jumping, dancing, and gymnastics as conducted in regiments, are the exercises best suited to soldiers.

EYES, INFLAMMATION OF. SORE EYES, OR OPHTHALMIA.—In former days this disease often prevailed as an epidemic in regiments, Now, however, it is very rare indeed. Under the operation of unlimited service, there is every reason to believe that men used means to produce the disease in their own persons and to extend its prevalence in regiments, that they might obtain their discharge from the service. All this is, however, now changed. Inducements have ceased to act in leading men out of the army. Among the causes of sore eyes, two of the chief are overcrowding in barrack-rooms, and insufficient care in avoiding the promiscuous use of towels by the men. In India, especially, these causes operate. Another seems to be neglect as to bathing the eyes on returning to the barrack-room from parade, there being much reason to believe that the very fine dust with which the air is often loaded during the hot season, not only causes the disease itself, but conveys into the eyes various impurities which directly produce the affliction. The disease usually comes on suddenly. A soldier awakens in the morning and finds his eyelids swollen, his eyes hot and tender. There is nothing then to be done but to bathe them in hot water, and proceed to the hospital as soon as possible. The chief object in view

should be to avoid the risk of attack by guarding against the causes enumerated. One kind of sore eyes—namely, *ulcerated cornea*—is often caused by neglect in the use of vegetables. A state of *scurvy* of the whole body thus arises, and the disease in question often arises as one of its consequences.

FAINTING.—Lay the fainting man in a current of fresh air, placing him at full length on his back. Do not raise his head. Undo his clothing over the neck and chest. Dash a little cold water over the face and chest. Place a scent-bottle, vinegar, or spirits under the nostrils for an instant. Repeat these measures at intervals of a few seconds, and if the *faint* is from ordinary causes the man will soon recover. If he does not recover, let him be carried at once to hospital. It is usually an easy matter to know when a man has fainted. He loses consciousness, falls, the breathing is scarcely visible; he lies as if dead, the face pale, the features "sharp," the nose pointed. A man may faint from being overheated, from being fatigued, from undertaking greater exertion than his strength is equal to, from having on too tight clothing or equipment, and from many other causes.

FALLING OUT.—There is often great injury to health produced by a soldier not falling out, or not being permitted to do so when necessity demands that he should. Men ought to be careful to make all their arrangements for parade so that they may in all likelihood not have to quit the ranks, as in many respects the practice is unseemly, besides being very annoying to the officers; nevertheless, when a sudden or urgent case of nature demands it, resistance is hurtful. No good soldier would of course make a practice of quitting his ranks while on parade, and no one would pretend to have to do so unless such were actually the case.

FATIGUE.—*See* REST.

FEET.—The feet of a soldier, especially of an infantry soldier, require great attention on his part to keep them in good condition, more particularly during continuous work. They should be kept clean. The toe nails should be cut, those of the great toes square, and clear of the *corners*, so as to prevent the risk of their growing into the flesh. On the march, the application of a little grease prevents *blisters* and *abrasions;* but at the end of each march the feet should be washed. In camp, and also in bivouac if possible, the feet should be left bare, or at any rate without boots during night. The application of brandy or of a little dry mustard in cold weather is recommended against the possible occurrence of chilblains, and then warm socks are indispensable. The French recommend a little spirits of camphor as an application when the feet are swollen or *frayed* by a long march. *See* BLISTERS. The feet must be kept dry and warm in order to prevent illness, especially colic, and "colds."

FIELD KIT.—The following is a list of the articles authorised to be taken by infantry soldiers when proceeding on the march or taking the field, in addition to what is worn on the person, viz. :—

1 Pair of boots,
1 Pair of trousers,
1 Pair of mitts,
1 Pair of socks,
1 Shirt,
1 Towel,
1 Cap and badge,
1 Great coat,
1 Cloth brush,
1 Polishing brush,
1 Holdall complete,
1 Bible,
1 Tin of blacking,
Soap and sponge,
1 Small ledger-book,
1 Pot of grease.

It is usually so arranged as that one full set of brushes is carried among three men, each carrying one. The articles worn by the soldier include 1 chaco, 1 tunic, 1 shirt, 1 pair of trousers, 1 pair of braces, 1 pair of socks, 1 pair of leggings, 1 pair of boots, a clasp-knife and lanyard.

FIELD KITS FOR OFFICERS.—According to published lists they comprise the following, viz. :—Leather dressing-case,

with hair and clothes brushes, soap in metal box, nail brush, comb, and scissors, 18s.; 1 flannel shirt, 11s. 6d.; 1 pair of socks, 2s. 9d.; 1 pair of drawers, 6s. 8d.; 1 silk handkerchief, 4s. 9d.; 1 pair of shooting-boots, 38s.; 6 boot laces, at 6d. 3s.; 1 housewife, fitted, 6s.; cotton handkerchief, 8d.; sponge and bag, 6s. 6d.; great coat, grey waterproof, 136s. 6d.; uniform trousers, 42s.; cup, plate, knife, fork, spoon, pepper-box, salt, mustard, in leather case, 33s.; basin, india-rubber, or bucket, 7s.; plates, tin, at 4d. 8d.; book for writing, with ink, 7s. 6d.; vestas, box of, 6d.; mackintosh guard bed, 22s.; lamp, 4s. 6d.; regulation india-rubber waterproof cloak, 50s.; india-rubber ground sheet, 21s.; inflatable pillow, 8s. 6d.; inflatable bed, 21s.; canteen for three persons, 50s.; water bottle, 8s. 6d.; drinking cup-horn, 2s.; filter, 5s.; soap box, 2s.; cork mattress, covered with serge, 15s.; camp rug, 25s.; tent pole, hook, and straps, 3s.; night cap, 1s. 4d.; wooden bedstead with canvas bottom, 26s. 6d.; valise, 52s.; Colonel Wolseley's valise, as improved by Colonel Cochrane, is convenient for keeping the kit, and may be formed into a bed.

FILTERS.—*See* WATER.—It ought not to happen, with all our existing arrangements, that soldiers should often be without the means of obtaining good water. Circumstances may, nevertheless, occur when they are so. If that which they have to drink or cook with is muddy, stagnant, or containing fragments of decaying vegetable or animal matter, it should be filtered. This may be done in a simple way by pressing the handkerchief in it, or sinking it by means of a stone, and then drinking the water after it has passed through. A piece of flannel is better than ordinary linen cloth for the purpose. Another method adopted by travellers is if possible to make a small hole in the sand or mud at a little distance from the pool or ditch. The water will rise in it after passing through the intervening ground, and if permitted to rest for a little will be quite clear. Under general circumstances regular filters of one kind or another are provided by the proper authorities for camp and barracks.

FIRE.—*See also* COOKING. On service men may at times be thrown upon their own resources for lighting a fire, as for a good many other things. Their best plan is to dig a ditch or trench about twelve inches deep and broad and two feet or more long, or arrange logs of wood or bricks in the same position, the openings at each end being in the direction of the wind. *Firewood* should be cut in lengths of a foot long by two inches. Brushwood may be collected, or cow dung or bones used as fuel. With gunpowder, a flint and steel, some tinder and dry grass or twigs, a fire may for the most part be easily lighted, and now the *match-boxes* carried by almost every soldier afford ready means of doing so. Two hard stones struck against each other will produce sparks. Burning glasses, the lens of a telescope or binocular, will concentrate the sun's rays, and so produce fire in tinder or dry cotton.

FIRST DRESSING.—In the case of a soldier wounded in battle, the first dressing, such as may be applied by a comrade with the means each is supposed to carry on his person, and until the services of a surgeon can be obtained, should be directed with the view of securing the wound itself and its subject from injuries on the field or in transport to the rear. The wound should be covered to protect it from dust; if a limb is broken it should be gently placed in a proper and natural posture, and secured in that position. If there is bleeding, cloth or pads applied firmly to the wound may check the flow; but if not, and a man know the general course of the blood-vessels, he may be able to apply pressure with his fingers so as to stop it. If he does not know their course, a bandage or handkerchief should be tied tightly round the limb at a point nearer the body than the wound. The cloths applied to wounds upon the field should in all cases be first soaked in water, or in spirits and water if that be possible.

FISH.—The use of *stale* fish as food is often followed by signs more or less severe of poisoning, and very generally

by *nettle rash. Shell fish,* as oysters, muscles, &c., are at particular seasons and in some localities actually poisonous, and in tropical countries it is at all times unsafe to eat fish brought casually for sale, there being some that can never be eaten without risk. Under such circumstances it is never safe to *keep* fish overnight, even if soused with vinegar and spices. In India, *prawns,* and indeed every kind of "fish," are looked upon as likely to cause cholera in those who use them. Soldiers arriving in foreign countries should always be careful in respect to eating fish until they learn what are the kinds that are wholesome.

FLANNEL.—Some few persons suffer so much from irritation of the skin from wearing flannel, that they object to use it. Notwithstanding the inconvenience that is occasionally caused by it, however, it is indispensable for men engaged on service, undergoing fatigue, or having much exposure to the weather, as by absorbing perspiration, and being itself a non-conductor, it prevents the person from suffering from sudden chills, as he would do if he wore only cotton or linen. Statistics prove that on expeditions the men who wear flannel are less liable to sickness than those who neglect to do so; mortality is also less among the former than the latter. During the winter season in cold or damp climates, the use of flannel underclothing is absolutely necessary for the preservation of health. By its use alone can men be protected against the diseases of the chest which are so prevalent during winter and early spring in Britain.

FOOD.—The soldier should carefully avoid committing errors in diet, or acts of debauch, as these not only destroy the healthy state of his digestion, but render him unable to perform his military duties. On the march or campaign he should not overload his stomach, neither should he use much salted or highly-seasoned meat, as these cause thirst, besides being hurtful in other ways. When on service or

otherwise situated, so that the regular supply of food cannot always be depended upon, he should have in his haversack a small supply of some necessary articles, as biscuit, coffee, vinegar, and spirits. These would serve to render palatable such articles of food as might be obtained, and the three last diluted would serve as drinks or as fomentations. The French soldier considers that on service soups and stews form better modes of cooking meat than roasting. Hence they seldom adopt the latter, and perhaps they are right.

As a rule, the more agreeable food is to the sight and flavour, the more enjoyment there will be in eating it, the easier it will be digested, and the greater the good that will be derived from it. Food that is not relished, still more what is loathed, does no good, but, on the contrary, harm when eaten. The more severe the work to be performed, the larger the quantity of food required; and soldiers on service, or about to go into battle, should have abundant and good food. Under all circumstances it is better to partake of food at short intervals than at long. In the latter there is risk of digestion becoming weakened, and in that state the stomach to be overloaded by too full a meal; disease of the stomach may be caused in this way. Fresh meat is more nourishing than salted, but the latter occasionally as a variety is agreeable and wholesome. The amount and nature of food required are influenced to some extent by the *temperament* of the individual. The *sanguine* are believed to require relatively small quantities, but these must be nourishing of their kind; for these, condiments, wine, and coffee are little needed. The *nervous* require a more varied diet, without stimulants. The *lymphatic* need a stimulant diet, as regards food and drinks. The *bilious* have always to exercise care as to what they eat and drink. Fat or *substantial* meat is for the most part injurious to them.

With regard to food in time of war, some points should be borne in mind by the soldiers themselves, as well as by the officers concerned. For the work then to be performed

a pound of meat is considered to be required. Beef and mutton should as far as possible be given alternately, and in addition a portion of cheese is beneficial. Peas or beans are further excellent as articles of diet, as these supply the material (nitrogenous) which goes to form muscle. A certain quantity of fat is also requisite. It may be taken in the form of butter, or as bacon, the latter kind of food being especially suited for the duties a soldier has to perform. If the use of oil could be introduced into our army as it is in the armies of Continental Powers, it would form an excellent item of food taken with salads, and in other ways. Bread, when it can be obtained, is always preferable to biscuit. Potatoes and rice are good substitutes for bread. The use of salt is a necessity, and in cases where there is a deficiency of vegetables it has been recommended to use a small quantity of potash in addition to table salt, the potass being intended to supply the want of this salt, as it is one of the ingredients of vegetables. On service, and indeed at all times, the use of vinegar is very wholesome. It may be used with fresh salads or added to cold potatoes, carrots, &c., and is important as a preventive of scurvy.

Condiments of different kinds, such as sauces, pickles, mustard, pepper, &c., are not only grateful, but in moderation wholesome. Their use, too, makes all the difference between an insipid and a tasty meal.

The loss on meat by cutting up, bones, cooking, &c., is calculated at nearly one half of the original weight; thus one pound of meat in the raw state yields no more than half a pound actually to eat.

Salted pork or *beef*, or *smoked* meat are sometimes issued in place of fresh, on active service or on some foreign stations. When they are so, they must of course be of good quality, but it is, moreover, necessary that they be carefully and well cooked. The French recommend that when the salt meat is a little *high*, a little vinegar or a small piece of charcoal should be placed in the water in

which it is soaked prior to being cooked; but inasmuch as only the first quality of provisions are issued to the British soldier, the precaution is doubtless unnecessary. *Bread* should be well baked, well kneaded; the crust neither too thick nor burned. *Biscuit* weight for weight is considered to be nearly double as nourishing as bread. Eaten dry, it acts like a sponge, however, absorbing the fluids in the stomach, and in the long run deranging digestion; hence, it should only be used continuously after being soaked in coffee or in soup, after the manner of the French. *Rice* should be white, little broken, and without much flour. The grain of African and American is large; that of the Bengal small. *Preserved vegetables*, if issued, should be "fresh" to the smell, and neither damp nor mouldy. *Potatoes* should be firm to the feel, and not used after they have begun to "shoot."

With regard to the actual quantities and kinds of articles recommended to be used by the soldier as food on service, the following are those laid down by Dr. De Chaumont, namely:—Meat, with bone, 1 lb., or without bone, 12 ozs.; bread, 20 ozs.; potatoes, 16 ozs.; vegetables, as carrots, &c., 4 ozs.; peas, or beans, 3 ozs.; cheese, 2 ozs.; bacon, oil, or butter, 2 ozs.; sugar, 2 ozs.; salt, ½ oz.; vinegar, 2 ozs.; condiments as required; tea, ½ oz.; coffee, 2 ozs., or cocoa, 2 ozs., making a total of 64 ozs. of solids. In addition, he would allow 20 ozs. of beer, and 1 oz. of spirits, or 10 ozs. of red French wine. This scale is excellent in every way, and may with advantage be adopted by the soldier, or made up in his articles of extra messing. The only point that admits of doubt is in reference to the beer and the spirits.

The following examples are given of the quantities of food actually consumed by soldiers in England for the sake of comparison, the total deductions from pay being also made, alike for the quantities issued under the name of Government Rations, and those issued as "Extra messing." —*See also* RATIONS.

2nd Battalion Rifle Brigade.

Government Rations.

Bread, 1 lb. ; Meat, with bone, ¾ lb.

Stoppage on account of Government Rations, 4½d. per diem.

Extra Provisions.

Bread	½ lb.	Sugar	2 oz.
Flour every third or soup day	½ oz.	Tea	1-6th oz.
		Coffee	1-3rd oz.
Barley every third or soup day	½ oz.	Mustard	1-12th oz.
		Pepper	1-36th oz.
Potatoes	1¼ lb.	Salt	½ oz.
Other vegetables ...	1¾ oz.	Milk	1-8th pint
Butter...	3-14ths oz.		

Stoppage per diem for Extra Provisions, 3½d.

Total Consumed Daily.

Total solids about 62 ounces.
,, liquids ... ... 2 pints.
Coffee, 1 pint.
Tea, 1 pint.
Soup, 1 pint every third day.
(Soup days—Every third day.)

3rd Dragoon Guards.

Government Rations.

Bread, 1 lb. ; Meat, with bone, ¾ lb.

Stoppage on account of Government Rations, 4½d. per diem.

Extra Provisions.

Bread	8 oz.	Sugar	2 oz.
Flour	0	Tea	1-5th oz.
Barley	0	Coffee	1-3rd oz.
Potatoes	1¼ lb.	Mustard	1-8th oz.
Other vegetables ...	2 oz.	Pepper	1-24th oz.
Butter	0	Salt	½ oz.
Cheese	0	Milk	2½ oz.

Stoppages per diem for Extra Provisions, 3½d.

Total Consumed Daily.

Total solids .. ... 3 lb. 13 oz.
,, liquids ... ... 2¾ pints.
Coffee, 1¼ pints.
Tea, 1½ pints.

1st Brigade Royal Artillery.

Government Rations.

Bread, 1 lb. ; Meat, with bone, ¾ lb.

Stoppage per diem for Government Rations, 4½d.

Extra Provisions.

Bread	0	Sugar	3 oz.
Flour	4 oz.	Tea	¼ oz.
Barley	1 oz.	Coffee	1-3rd oz.
Potatoes	1 lb.	Mustard	1-32nd oz.
Other vegetables ...	8 oz.	Pepper	1-32nd oz.
Butter	0	Salt	1-16th oz.
Cheese	0	Milk	4 oz.

Beer, 1 pint daily.

Stoppage for Extra Provisions per diem, 4½d.

Total Consumed Daily.

Total solids ... ... 3 lb. 9 oz.
,, liquids ... ... 3 pints.
Tea, 1 pint.
Coffee, 1 pint.
Beer, 1 pint.

Roast meat, 3 days ; stewed, 3 days ; soup, 1 day per week.

With the introduction of the contemplated changes in regard to soldiers' pay, the daily stoppage of 4½d. for Government rations will cease.

Fractures.—*See* Dislocations.—This kind of injury may be *simple* or *compound*, that is, without or with a wound through the fleshy parts that cover the bone. *See also* Wounds *with* Fractures. Those that occur otherwise than in battle may be caused by blows, falls, by slips and accidents, at violent exercise, or in the gymnasium. The bones most liable to them are those of the limbs, the ribs, and *clavicle* or collar-bone. The signs of the accident, if in a limb, are swelling, unnatural appearance, impossibility on the part of the person to move the limb, great pain, and a grating sensation or *crepitus* when an attempt by a second party is made to move it. If the fracture be in the arm, it is possible that the patient may be able to walk to hospital. If in the lower, he must be carried. *See* Stretchers. To carry a man thus injured three *bearers*

are requisite, and these should not only be prudent but calm and cautious. They should proceed to place him on a *stretcher* as described under that head, also that of CARRYING, being careful to avoid injury to the fractured limb, and so *carry* him to hospital. If a stretcher be from any cause not obtainable, a wheelbarrow having a thick bed of straw upon it may be used, or a cart similarly protected. Until the arrival of a surgeon all that can be done is to prevent the injured limb from being jerked and keep cold water applied to it.

FRUIT.—Like everything else, so in regard to fruit, a thing in itself good, when used in moderation, and at proper times, it becomes injurious when taken in excess or improperly. In temperate climates, and while no tendency to epidemic cholera or diarrhœa prevails, a soldier must indeed take a very large quantity of fruit to do him harm. If he commit excess in this respect the chances are that he will suffer so severely from stomach-ache that he will not again run the same risks, and the less ripe the fruit is, the more severe will of course be the effects. In tropical climates, however, and especially in times of cholera, the use of fruit requires great caution, as in such cases, attacks of that disease, as well as of dysentery, are often directly produced by it; and, moreover, there are in foreign countries many kinds of fruit very tempting to the eye which are yet very dangerous, some, indeed, actually poisonous in the use. The descriptions of fruit that are considered wholesome are usually allowed by commanding officers abroad to be taken round the barracks for sale, and to these soldiers should restrict themselves. In some cases, as when vegetables are scarce, or unprocurable, the use of the acid fruits is wholesome, in preventing the liability to *scurvy* that otherwise would arise. It is never safe for a soldier walking in a foreign country to pluck and eat any fruit he sees growing. Sometimes indiscretions of this kind are followed by very serious consequences so far as he himself is concerned.

FROST-BITE.—*See* COLD.—The parts "bitten" become at first red, then swollen and stiff, then white and insensible. They become cold, benumbed, and soon lose their vitality altogether. In such a state a man should not be brought into a hot room or near a fire, but should be left in an unwarmed room or the open air. He should be rubbed with snow on the spots affected, care being taken that violence is not used, otherwise the skin will get rubbed off. When circulation of the blood begins again in the frost-bitten parts the sensation of heat on the part of the patient becomes intense. Instead of continuing then to rub with snow alone, snow mixed with water may be used, the rubbing or friction being employed very gently indeed. If the frost-bite has been confined to the more exposed parts, as the face, nose, or ears, these should be very gently rubbed with a cold application at first, then after circulation has begun to return, with warm water and then with folds of dry cloth, being first smeared with oil. The further treatment must take place under the orders of the surgeon. To guard against frost-bite apply to the exposed parts of the body before going on duty during great cold, a little grease, or what is better,a little camphorated oil. Soldiers when serving in very cold climates or seasons should always provide themselves with either of these preparations. The ears are very liable to suffer in this way in severe winters. During the Franco-German war the soldiers of both armies were provided with woollen hoods which completely protected these parts. The hoods in question were called by the French, *passes montagnes.*

FUEL.—*On service,* the allowance of fuel is 3 lbs. of firewood or coals per man per day; with the latter, 1 lb. of kindling wood for every 36 lbs. of coal. This is only for cooking. The allowance of fuel on home service is obtained according to the following scale, per man, viz.: coal, 1 lb.; kindling wood, 6-7th lb., or turf, 1-112th kish. That for *cooking* is drawn separately. The allowance for this purpose varies according to the kind of cooking apparatus

in use, and number for whom cooking is performed; as a rule, however, the strictest economy is needed to render the regular allowance sufficient.

FURLOUGH on sick certificate may be obtained by soldiers on home service on the recommendation of the surgeon-major of their regiment. When absent on such furlough, however, they must themselves bear the expense of medical attendance, except when they can obtain admittance into a military hospital. In all cases they should, if possible, refer to an army surgeon in the event of their desiring a renewal of their sick leave. It unfortunately so happens that from want of care and discretion on the part of men themselves, instead of those who obtain the indulgence for the benefit of their health really deriving any advantage from it, they are often seriously injured. Other men rush into recklessness of various kinds, and by no means seldom return to their regiments affected by *disease* of one kind or other, in addition to their original ailment.

GAITERS are happily not much worn in the British army. In the French, where they form an important item of the soldier's kit, they are far less useful than showy. They, and especially those of leather, contract the lower part of the leg, and when they become hard, as they do after long use and exposure to wet, they blister or *fray* the skin. If made to secure with buttons, these are apt to come off; they hurt the leg when marching, if made to *fit neatly*. If secured by laces, these get broken, and cannot be secured in a hurry or in the dark. The French surgeons saw all these disadvantages, and all are loud in their condemnation of the favourite gaiter, as being both useless and inconvenient. They advocate the substitution of the Prussian boot for the shoe and gaiter on active service.

GLANDERS.—The cases are infinitesimally few, still, soldiers of the English army do sometimes become attacked with this very fearful disease. The experiences in the late

war on the Continent indicate that a few cases occurred among soldiers who had slept in or otherwise taken advantage of the shelter of strange stables, where diseased horses had no doubt been put up. Hence it is important to warn our own troops against making use of such places, should they be on the march or on service.

GRUMBLING.—A grumbling soldier is necessarily a discontented man. A habitually discontented man is sometimes led to commit excesses out of mere disappointment, rage, or other unworthy motive. Excesses, besides lowering moral character, expose a man to danger of accident and disease, and sooner or later lead to broken health. If, therefore, a soldier imagines he has cause of complaint in any way, let him seek an interview with his officer and respectfully tell him his grounds for thinking he has one. No good officer ever refuses to help a soldier, if it be in his power to do so. But if, as may so happen, the complaint is without sufficient grounds, or of a nature which cannot be immediately remedied, then the soldier should have the sense to put up with it for the time, knowing that if he does so, matters will in due time rectify themselves. Where, as in the army, strict rules are enforced for the good of the many, it cannot be but that in some instances they press hard upon an individual. If then he has patience, he may be sure that after a time *his luck will turn.*

GUARD.—Mounting guard is perhaps the duty that most constantly and continuously has to be performed by a soldier. Its frequent recurrence, by the mere fact of breaking and shortening his times of rest, has necessarily more or less of a wearing-out effect upon him. Hence the necessity on his part of not only doing nothing that is calculated to add to these effects, but of reducing as much as possible any inconvenience that may be unavoidable. It must be remembered that in all armies, guard duty, however inconvenient it may be to individuals, is looked upon as an important means of keeping troops in a state of

military efficiency. It is the duty of commanding officers to reduce the number of guards, if possible, so that soldiers shall not have to mount, in a temperate climate, more than once in six days, and in hot climates, once in nine to twelve. Of course, there are many occasions when the *strength* of regiments does not admit of these rules being acted upon, but in India there exists an order, that whenever men are oftener on guard than once in three days a special report of the circumstance must be made to the authorities. During a soldier's tour of duty, he has sufficient opportunity between his turns of sentry to rest himself, and should accordingly avail himself of this spare time for the purpose. If the night be cold, he should avoid exposing the body or face to the heat of a fire before going on duty, as by so doing he renders himself more liable to catch cold. He should always have the means of changing socks or clothes that may become wet; and before mounting at night he should have a cup of good hot coffee. If he gets wet while on guard, it is obvious that he should change his clothes immediately he comes off, drying his wet ones at the fire in the guard-room.

GYMNASTICS.—These are regulated by special orders in regard to them. Yet the non-commissioned officers find the men themselves have it in their power to make some small but very important modifications. It is apparent that a young half-starved recruit, or one of lax and delicate fibre, will be unable to undergo exactly the same course as another whose condition is the opposite of all these. It is necessary that young lads should be *fed up* to enable them to undergo their regular course. Again, men are of different degrees of natural agility, and this fact should be borne in mind by instructors, as well as by men themselves while undergoing training. It must be evident also that the aptitude of a young man to perform particular feats must depend upon the occupation he followed previous to enlistment, and the muscles or limbs then most frequently employed in that occupation.

HABIT.—"Habit is second nature." The soldier, and especially while young, should guard against the risk of falling into habits which are neither good nor useful, which are expensive, and of a nature to cause inconvenience, if not absolute injury, to him in after years. Soldiers should remember that the age of early manhood is that in which the constitution most readily becomes accommodated to circumstances in which they may be placed, and also that in which habits and peculiarities are most readily contracted. They should therefore accustom themselves to cleanliness, activity, sobriety in all things, to regular method, and to the virtue of living upon their means. Those who begin their career by recklessness find it very difficult after a little to *pull up*.

HÆMORRHAGE.—*See* WOUNDS WITH MUCH BLEEDING.—In order to check hæmorrhage from a large vessel, pressure in some shape or other must be used, as by means of wetted pads, or the fingers, or the application of a handkerchief above the part, a piece of wood being placed under it and the cloth twisted tightly, so as to check the flow of blood towards the injury. In all cases where a wound is bleeding freely the utmost haste should be used in sending for a medical officer, as the life of the patient must always be looked upon as in the utmost danger. There is a particular habit of body in which slight wounds, as scratches, having a tooth out, and so on, are followed by inordinate and even dangerous bleeding. Cases of this peculiarity are very rare, but when they do happen they require the attention of the surgeon.

HANGING.—In some rare instances an unfortunate man attempts suicide by hanging. This, when it happens, takes place usually in a prison cell. The body is to be immediately cut down, the cord undone and removed from the neck. He should then be carried to a place where there is plenty of fresh air, laid upon his back with the chest slightly raised, and treated precisely as if for recovery from DROWNING. Cold water should be applied to the head.

HEAD.—Should be kept *clean* by daily brushing and combing the hair, and by frequent and thorough washing with soap and water. Regulations restrict the length of the hair, but, irrespective of them, the shorter the hair is kept the more easily kept clean it is. Every man should use a small-tooth comb. No man ought to use his neighbour's hair-brush, as very nasty and obstinate diseases of the skin are sometimes spread in this way. Of course, the brush used should be itself clean.

HEALTH, the greatest blessing, is that which all men are most liable to lose, whether by causes over which they have no control, or by such as might be avoided. Soldiers are, from the nature of their profession, subject to some causes of loss of health which do not affect the civil population. In addition to these, they destroy it by excesses of different kinds—drink, libertinage, late hours, and indulgences in other ways; they injure health by errors in regard to food, clothing, and from errors in other ways, committed through ignorance or thoughtlessness. Health is influenced by the various conditions under which we live; by air, temperature, and climate; by accommodation, food, clothing, nature of work; by rest and exercise; by exposure or otherwise to epidemic influences; and, to some extent, at least, by the class of places we visit and of persons we associate with. In fact, it may be said that health, cleanliness, and morality go hand in hand.

HEALTH. PRESERVATION OF.—During the Franco-German war, distinct codes of instructions for the preservation of health were issued by the respective Governments for the use of their soldiers. Nor can we do better than transcribe the following, found on the person of a Prussian soldier killed in battle:—

"We know by experience in all wars that our incomparable soldiers suffer much more by disease than by the risks of wounds and death in battle, yet a great many of the

diseases may be avoided by care, attention, and foresight. Nothing can be more dangerous than to believe too much in one's own strength. If many of our soldiers fall sick during war it is by over-eating and want of cleanliness. By these two evils the country often loses heroes who have escaped the bullets and sabres of the enemy. For these reasons the soldiers, but still more the officers, should actively see to the execution of the following rules:—

"1. The soldier should drink for thirst fresh and pure water. On the march and in hot weather it is impossible altogether to abstain from drinking, but it is necessary to be careful, and especially about the water used. Drink little by little, without swallowing the first few mouthfuls; these should be thrown out and the temples at the same time be wetted.

"If there is no well or cistern water, but only that of rivers, tank, or ditch, it should, if possible, be filtered through charcoal, or it should be boiled, then allowed to cool, and afterwards mixed with brandy, tea, or coffee.

"3. To drink pure brandy, rum, or other spirits in order to quench thirst is bad, because these reproduce thirst, and instead of strengthening, weaken the person.

"4. The soldiers should never drink beer that is 'turned,' cider, nor wine of the country to which they have not previously been accustomed, even if they are offered, as they induce pain and derangement in the stomach and bowels.

"5. Tea and coffee are, it is true, very light drinks for fatigue: they are better than water however; they can be drank cold, are prepared in the early morning and carried in the water bottle with which each soldier is furnished. A slice of lemon or a little vinegar may be added, if the weather is hot.

"6. Often the soldiers are hungry and thirsty. When they find fruit and grapes they think these will satisfy them, but they will not; they are cold, they only increase the hunger and the thirst, and themselves cause inconvenience.

"7. If mouldy bread be offered the mouldy part should

be cut off and the remaining part heated. Baking or heating will destroy the mouldy taste.

"8. Fresh cooked food, especially potatoes, is best for the nourishment of the soldier.

"9. Fresh meat should only be roasted for a short time; it should not be eaten too much cooked; if boiled, it should be at once put into hot water so as to preserve the juices. As to salted meat, it should be steeped for some time in warm water before being cooked.

"10. One great matter for the preservation of health is cleanliness of the body as well as of the linen and clothes. The men should bathe when warm, and especially the feet and eyes; these should also be bathed in the morning and again at night before going to bed.

"11. The feet should be maintained carefully in a state of cleanliness. Care should be taken to grease the boots if they become hard; the inside should be rubbed with soap and suet. If the feet are sore, change the socks often. Bands of linen are better than socks, because they can more frequently be washed. To heal blisters, drop upon them a little brandy or warm suet.

"12. Many diseases arise from cold, because the young soldiers do not cover themselves sufficiently. Cotton or flannel shirts are, in such a case, preferable to those of linen. Men whose chests are weak should wear flannel shirts or woollen waistcoats. For affections in the abdomen a woollen belt is excellent.

"13. When the soldiers enter their quarters they should immediately close the windows and avoid draughts of air.*

"14. In marching during hot weather they should cover the head and neck with a light linen cloth, as for example, a pocket handkerchief, and should put a fine net over the mouth, so as to guard against thirst.

"15. On being attacked with the slightest illness it is

* Surely this is a little too absolute. Fresh air, so long as there is no direct draught can do no harm.

recommended that the soldier show himself to the medical officer; many, from pride or bashfulness, avoid doing so until too late, and after the attacks, at first light, as catarrhs, diarrhœa, and so on have degenerated into sources of danger."

HEAT APOPLEXY.—*See also* APOPLEXY.—In India, during the hot winds, a man is found, perhaps in the guard-room or cells where he has been confined, in his bed in barracks or hospital, lying upon his back in a state of insensibility, with stertorous breathing or heavy snoring, froth issuing from the mouth or nostrils, the face generally greatly flushed, the whole surface of the body red, intensely hot, and especially so over the pit of the stomach. If the hand be placed on that part, a thrill of heat of a very peculiar and distinctive character will be felt. Sometimes the patient moans, or talks at intervals incoherently; sometimes he moves his arms about, or strikes them against his own person. Generally, however, he lies perfectly still upon his back. In such a case, if dressed, the clothing should be stripped off. At any rate, the patient should be at once completely soused with water thrown from a height; one stream directed upon his head, care being taken that his mouth and nostrils are kept clear of the stream for respiration; another should be directed over the pit of the stomach. It is well to be careful that the head is properly supported, as by its being in an awkward position, so that the chin presses against the chest, breathing may be rendered impossible, and the patient thus suffocated. As soon as a stretcher has been got, carry the man to hospital, his whole body covered with *wet clothes*. In India—as, for example, during the Mutiny campaign—it was found that men and officers had every now and then to have water poured over them, and march along until they became dry again. In this way, heat apoplexy was averted. It is also necessary, under such circumstances, to avoid over-indulgence in beer or spirits. It is usually the dissipated who become the subjects of this affection.

HEART, DISEASE OF.—This class of diseases have, unfortunately, become very prevalent in the army of late years, and much attention has been bestowed by surgeons on their investigation. They seem to be induced by a combination of causes, rather than by any one; and whether they be what are called *organic*, or merely functional, are alike grounds for discharging their subject from the service, although in the latter case their presence does not unfit him for work in civil life, nor necessarily shorten his life. The best means of guarding against their occurrence are the following:—The young recruit to be not over-drilled; not too long kept in a constrained attitude; to be encouraged to spend his surplus money more in the purchase of eatables than drinkables; to be put on his guard against *excesses*. The practice of soldiers—old as well as young—remaining in public-houses so late that they have to run, probably up-hill, so as to be in time for the *last post*, is, it is to be feared, a fertile source of these affections. They are stuffed and stuffy from eating, drinking, and smoking, and thus soon get *winded* when they have run short distances. In some constitutions, tobacco-smoking seems undoubtedly to cause a liability to these affections, and it certainly aggravates them when they occur.

HORSE-FLESH.—The use of horse-flesh as food is repulsive to the ideas of British soldiers. The French, however, use it freely, and after a battle are thus enabled to make very hearty meals, when otherwise they would be badly off. There is cause to believe that it is unsuited for continued use, but that is no good reason why it should not be partaken of if such a necessity should arise. The French convert it into soup when bivouacking on the field, and thicken the bouillon with biscuit.

HUTS.—Various kinds of huts are used for accommodating troops. That most convenient for war service is the *Glo'ster* hut, 28 feet long, 16 feet wide, 6 feet high at

the eaves, 16 feet at the ridge, and capable of holding 24 men. Another kind of hut is erected, each capable of holding 28 men. These are 32 feet long, 16 feet broad, and 6 feet high from slope to wall plate. Two of these may be put up end to end, separated by a partition wall containing the fireplaces. Mud huts can be thrown up. Thus the Sardinian soldiers in the Crimea took advantage of inequalities of ground to make huts, the roof sloping down from the scarped face of a ridge; the gables made by loose stones. One of this kind, 14 feet 3 inches long, and 7 feet 1 inch wide, accommodated 6 men. In India, the "temporary" barracks erected at many places, as, for example, when the Punjaub was first occupied, and during the Mutiny were nothing more than huts consisting of wood and mud. These have given way to more imposing buildings now, but there was a time when they existed at almost every station throughout the country. During the late war in France huts of various kinds were quickly run up for the troops employed in besieging cities, as also for those defending them. In this country the huts in the "camps" are certainly cold in winter, but it may be consolatory to the soldier to know that they are healthy, even in the case of men arriving at these places from hot countries. In fact, the *malaria* they bring in their systems seems to be thus dispelled.

HYGIENE.—The science so called, that of preserving health, derives its name from *Hygieia*, the daughter, according to old Greek mythology, of Esculapius. Esculapius was also called *the life-giver*, his daughter Hygieia, *the health-giver;* and we learn that in those ancient times quite as great a degree of importance was assigned to the preservation of health as to the art by which it was recovered when lost. As applied to soldiers, hygiene derives a degree of importance far greater than it does in civil life, and thus its practice becomes a speciality. In civil life it is true that the interests of the individual and of the public have

alike to be considered. In addition to these, however, other considerations of great moment have to be taken into account in applying the science in the army. Soldiers have always been and now more than ever are the real *sinews* of war; the commander who is able to bring the largest number of efficient men to bear upon a given point at a particular time is he with whom success declares itself. In order, therefore, that soldiers by whom virtually battles are fought shall be physically prepared for the fight, they must be as far as practicable preserved from the known causes of disease, the strength of the healthy maintained, the duration of unavoidable sickness and of wounds shortened to the utmost. The medical officers of the army have to study the varying conditions demanded by military service, and devise means best calculated to preserve health under all of them; yet it must be obvious that to a very considerable extent much of the success of those measnres depends upon the soldier himself, towards whom they are specially directed. Unless individual men carry out, each for himself, the rules that alone can ensure health and efficiency, such rules, however good and suitable in themselves, will be ineffectual to secure the great end they have in view.

ILLNESS.—It does not comport with the position of a soldier to have a constant dread of illness, and to be always under apprehension of attack. On the other hand, it is equally injurious to *brave* the first seizure of disease, there being many which, although easily combated in their early shapes, yet if left to themselves speedily become uncontrollable. Therefore, a soldier ought to lose no time, when fairly ill, in applying for medical aid. The idea of *shaking off* grave disease is simply foolish. As well might a man hope to *shake off* mortality. Often a little rest and quiet in hospital for a few days, will of itself be sufficient to ward off what would, if unattended to, become an attack of illness, provided this be attended to sufficiently early.

INDIA.—A special paragraph is given to *India*, the more distinctly to impress upon men and officers the necessity, for some time at least after arriving in that country, to beware of the risks they run, not only from endemic diseases of the country, but from the effects of any recklessness or indiscretions of which they may be guilty. Experience, often gained under painful circumstances, has led all classes who have lived some years there to adopt certain habits and style of dress, to keep certain hours different from those observed in England, and to adapt themselves in a great variety of ways to the conditions of the climate. It is a common thing for the newly-arrived regiments, men and officers, to pretend to ignore all those habits, to keep up those of home. The consequences soon manifest themselves. Sickness and death begin to rage, an epidemic of cholera takes place, the survivors are sent home to England "sick;" and by-and-bye routine is adopted such as circumstances have made compulsory on every regiment that has ever served in India, and which would have been the means of saving many a life in each of them if that routine had been adopted earlier. Persons who have little or no practical experience of India, may say what they choose as to the country being *healthy* if it were not for the *indiscretions* on the part of those who suffer and die there. The facts remain that the climate is as unhealthy as it is unnatural to a native of Britain, and that care is ever necessary, so that the subtle influences of disease may be in some degree, if not altogether counteracted.

INFECTION.—There exists a very general, and, it must be added, well-grounded dread of *infection;* hence the unlucky man who becomes the subject of small-pox, scarlet fever, or other disease that is capable of being propagated in this way, must be prepared to be placed in quarantine, and have communication between him and his friends completely cut off. This is most necessary in regiments, where the greatest good of the greatest number has to be considered rather than individual interests. Nevertheless, it may be well to observe that there really exists less

danger of a person visiting a patient affected with such diseases becoming himself attacked with them than many people suppose. The actual sphere within which infection acts is comparatively limited, always assuming that the visitor does not breathe the breath of the patient, or the emanations given out by his body. It is essential, however, for his own safety, that the visitor be in good health, perfectly clean, and perfectly sober. An individual may, without himself being the subject of infectious disease, convey and propagate the infection by means of his clothes. Some persons, also, are more liable than others to "catch" infection.

INFIRMIERS; *i.e.*, ORDERLIES over Sick or Wounded.—The functions of an attendant upon the sick have an importance second only to those of the medical officer. In several respects the question of the life or death of a patient is resolved by the fitness or unfitness of the *infirmier;* it is, therefore, a matter of the utmost importance that men selected in that capacity should be qualified for it, and fully conscious of the important part it is their duty to fulfil. It is above all things necessary that they should guard against that *hardness* which is said to become engendered by familiarity with suffering. They should be respectable men, of tolerable education, affable and kind to the patient, watchful at all times, but especially at night, and careful to carry out the orders of the surgeon, in spirit at least, if not to the letter. In all armies the desire is to obtain the most respectable men as *infirmiers.* In that of Germany special inducements are held out for soldiers in this position to adopt nursing as a profession, those who obtain certificates of qualifications from the medical officers being pretty sure of employment in civil hospitals, asylums, &c., after having completed their military service.

INTOXICATION—*See* DRUNKENNESS.—In the greater number of cases all that is necessary is to place the person in such a position that as he lies there shall be no risk of

suffocation. Thus, let his head and shoulders be gently raised; then sponge or sprinkle his face with cold water, and allow sleep to recover him. In very bad cases, where the patient threatens to die, proceed as in that of a drowning man. *See* DROWNING. Move him gently from side to side. Endeavour to produce vomiting. Apply strong scents to the nostrils. Rub the limbs. Bathe the face with cold water, or water containing spirits or vinegar. If a man insensible from intoxication is placed in a solitary cell, he should be visited at short intervals by the sergeant of the guard, otherwise he may turn himself into such a position as to be unable to breathe, and thus die by suffocation.

LIGHT.—Without free exposure to the light of the *sun*, health and strength alike suffer. Children brought up in close streets and alleys are for the most part sickly, often morally as well as physically debased. Light is as necessary for the full health of a man as it is for that of a plant, and without it both alike become *bleached*. Barracks in temperate climates are built so as to receive the greatest amount of light; so are hospitals, and any soldier who has been ill is aware of the pleasure felt when he for the first time is able to leave his bed and fairly enjoy the sunlight. Cheerfulness is encouraged by light, and depression by the absence of it. *Consumption* is one of the diseases that are induced by the absence of light.

LIGHTNING.—A man is struck by lightning. Let him be laid in an open place, where he can have free circulation of air, undressed, and his whole body sponged with cold water. Rub his arms and legs; tickle his nostrils. The limbs that are insensible should be wrapped in linen or cotton cloth moistened with spirits and water; the parts that are burnt, smeared with oil. If the man be delirious, or there are convulsive movements of the limbs, the head is to be freely bathed with cold water. Artificial respiration may be tried, as in the case of drowning, and as

soon as the patient is able to swallow he should have a little spirits given to him.

LIVER.—Disease of the liver is almost exclusively confined to soldiers serving in the East and West Indies. It is most common in the former. Undoubtedly, over-eating, over-drinking, and needless exposure, whether by night or day, are among the more frequent causes; yet it is well that the steady soldier should know that even he is by no means exempt, the continued heat of the climate being often capable of producing the affection. Sometimes the attack is sudden, the person being seized with excruciating pain under the right ribs; sometimes it comes on more gradually, with a general feeling of being out of sorts, want of appetite, feeling of heaviness in the side and constipation. Once the disease has really become confirmed, it is seldom got rid of in India. The only advice, therefore, that can be given, is—Take it in time; consult your medical officer, and trustfully submit to the treatment prescribed by him.

LOADS.—A soldier may often be so situated as to require to extemporize carriage for stores of different kinds, and therefore he should know what weights may be carried by the different means employed. A donkey will carry about 60 lbs., a small mule 100 lbs., a horse 200 lbs., an ox 200lbs., a camel 400 lbs. An animal, except a camel, will draw upon wheels about twice and a half the weight he will carry. A light cart, exclusive of the driver, should not carry more than 800 lbs.; a light waggon, with one or two horses, 1,500 lbs.; and a waggon of the strongest construction not more than 3,000 lbs. As to the quantity of food forming loads, a strong waggon will carry 1,000 full day's rations.

LOST.—If you lose your road in the dark, the best plan is to remain where you are till daylight, making what protection you can against attacks by wild beasts. If you

lose your way in the daytime, proceed in such a way as to leave marks of your course; mark twigs of trees, or drag a stick to make a track. If you see smoke, even at a great distance, make for it. If in a desert or large plain you lose your way, and also lose count of direction, your plan is not to wander, but remain in one place, in the hope of sooner or later being relieved. In India, the frequent occurrence of sunken wells, without any fence round them, renders it extremely dangerous for soldiers to wander about at night, and many lives used to be lost by men falling down them.

LUNGS.—These organs are extremely liable to become diseased in the United Kingdom. Disability from this cause is very common among soldiers, young and old. Much may be done by men themselves to guard against disease, or to delay the development of those germs that are inherited by them from their parents. The more violent the exertion undertaken, or the more rapid a pace at which a soldier walks, the more rapid his respiration will be, and the more work is thrown upon the lungs. Exposure to wet and chills on the one hand, and neglect of proper ventilation in the barrack-rooms, increase the risks of these diseases. So does want of care in regard to clothing. A man becomes hot: he throws open his dress; it may be stands in a draught, or perhaps lies down on the damp grass. The natural result is an attack of *cold*, or inflammation on the lungs, from which recovery may perhaps be difficult. When a soldier does become thus affected, the sooner he consults his medical officer the better for himself.

MALARIA.—The presence of the influence so named is doubtless the actual cause of ague, and other fevers of various kinds. It is always most powerful in its action at night, and indeed is for the time being rendered powerless by dry heat of 86° F. and upwards. If troops have to halt during the night in a malarious locality, they should know that by lighting fires between them and the

place whence it arises, or around them, they afford themselves the best protection in their power against it. If passing through such places a pocket handkerchief applied to the nostrils so as to admit of breathing taking place through it, is also in some measure a safeguard, as the *malaria* clings to vegetable fibres. Whatever be the actual nature of malaria or *marsh miasma*, practical experience proves that it is most powerful in its effects in low damp localities, the soil of which consists of rich mould or alluvium; that in such localities intermittent fevers or ague prevail in temperate climates, and in addition remittent or jungle fever, diarrhœa, dysentery, and cholera, in hot and tropical climates. All marshes, however, do not produce malaria; thus the *peat bogs* of Ireland and Scotland are free from it. In some countries, more especially in those that are tropical, the act of turning up the soil liberates malaria, hence the obvious necessity of avoiding to do so when pitching camps or individual tents. If soldiers are obliged to sleep or remain in a malarious locality, in addition to using the precautions already indicated, they should keep the doors of their huts or tents closed on the side facing the source of it, use no water except what is filtered, take a little *spirits*, wine, or malt liquor, and be careful to have some hot coffee before quitting camp in the early morning. QUININE WINE is also useful as a preventive.

MALINGERING—FEIGNING ILLNESS—in olden days used to be very common among soldiers. It is now comparatively rare. The ease with which inefficient men may be replaced makes it of little account to retain either the unhealthy or the unwilling. It is a mistake on the part of the malingerer, however, to suppose that his fictitious illness passes undetected by the surgeon and his comrades. Often the former, even when he does not appear to be so, is quite aware of the imposition, but as the impostor is for the most part a man of bad character, everybody is glad to get rid of him. There can be no

meaner conduct than for a person to pretend being ill when he is not, thus practising deception and throwing extra duty upon the more honest of his comrades.

MARCH.—Order and precision on the line of march have also their influence upon health. It is the duty of officers to see that the time selected for the march shall, if the requirements of the service permit, be such as to avoid the great heat of the sun in summer or tropics, and the greatest cold in winter. The troops should never begin a march until after they have broken their fast in some manner, say by a cup of coffee and a biscuit. Officers will see that the rate of pace is moderate, and that *spurts* are avoided, that the proper distances between files, ranks, and larger bodies is maintained; that the halts are neither too long, nor in positions where the men, heated with exertion, shall be exposed to draughts of cold wind. No man should stray away from the column. Whenever a halt of sufficient length takes place, it is well to take off the boots and socks, dust them, and wash the feet in cold or tepid water, bathing the eyes and face at the same time. Our soldiers, while pursuing the mutineers in India in 1857 and 1858, had often to march throughout the heat of the day, and during the hot winds. They every now and then soaked their heads and whole bodies in water, carried for the purpose in skins on the backs of elephants, camels, &c., and thus were enabled to continue their journey, APOPLEXY being at the same time averted. To drink much while on the march is injurious, even if it be only of water. Spirits or beer to excess simply render a man unfit to march. Doubtless the reputed cases of APOPLEXY among troops in the United Kingdom are in reality from the effects of over-drinking. The collar and breast of the tunic should always be open during long or quick marches. In Europe the regular roads are considered those best suited for marching upon. In India the *cutcha* or unmetalled roads, although very dusty, are preferred by the troops. The men themselves soon find how necessary it is in India so.

to time the hour of starting that they shall reach their new camp ground before the sun becomes hot. They also soon learn how necessary and enjoyable is the half hour's halt midway, and the coffee and biscuit then served out to them, generally just as day is breaking. If a *malarious* track of country has to be traversed, the officers in command, on the recommendation of the medical officer, will see that marches take place while the sun is up, provided circumstances admit of this. In some books allusion is made to the supposed advantage of men while marching having their toes either turned a little in, or at any rate the feet not being turned outward. The best plan seems to be to retain the position in this respect to which individual men have been accustomed. Officers should see that on the line of march troops occupy their proper side of the road. Thus, horses and conveyances meeting or passing them do not cause inconvenience. They should also avoid having the men under arms for a needlessly long time before the march begins. The pace should at first be moderate, afterwards accelerated, and again slow before reaching the camping ground. It is considered advisable to have a short halt every hour, and a long halt midway; and for obvious reasons the midway halt should be longer than any of the others. On these occasions the men should not be harassed by orders of a trifling nature, the object being to give them as much rest as circumstances permit. Men on a long march soon come to suit their hours of sleep to the time they have to begin their march. Regular hours are very necessary, and care should be taken by their commanders and others not to disturb unnecessarily the men who are asleep. It is well known that the men become more fatigued the nearer they are to the rear of a column on the march. Hence the propriety of changing the order of march in that respect from day to day.

MARRIAGE.—Considering the changes in the military system now contemplated, marriages *with leave* will soon virtually cease among soldiers under the colours. As, how-

ever, men will have passed through their period of active service by the time they attain the age of 26, this is not only no real hardship, but a direct advantage to them, whether they think so or not. In former days when soldiers remained 21 years and more in the ranks, those who were married were amongst the most steady and respectable in the regiment, as well as those most exempt from sickness, and consequently most efficient as soldiers; yet as their means were very seldom sufficient to keep their wives and children, these had to undergo trials and privations of a very sad kind. often bringing with them great anxiety and unhappiness to the husband. During marches and on board TRANSPORT SHIPS the families of soldiers used to suffer great discomforts; during active service wives and children had to be left with only the small provision made for them by Government, and depending upon such charity as well-disposed people chose to bestow for their assistance. Taking all these things, therefore, into account, I would say to a soldier about to marry. Decidedly "don't" while in the ranks as a private. Marriages contracted "without leave" cannot be too strongly condemned. A soldier in this state must either act like a villain and cast off his wife, or reduce her and himself to abject poverty. They must take lodgings in the lowest and very worst localities in garrison towns, in the midst of crime, where vice abounds, and to one or other or both of which they will very probably sooner or later fall victims. Women who marry under such circumstances are not as a rule desirable in any way as wives, but rather the very opposite. It may be added that little do young women who are on the look out for soldiers on Sunday afternoons know how miserable is the position of a soldier's wife under many conditions, notwithstanding that certainly much is done with a view to enhance their comfort.

MORALITY.—The soldier who leads a life of morality and self-restraint is he who enjoys the soundest health, is best fitted for duty, is most likely to gain promotion, and to

obtain a pension sufficient to keep him in ease during old age. There are still higher objects than these to be looked for from a life of morality. The reckless and immoral make the worst soldiers; those who enter battle with a full knowledge of their condition are always the most trusted, and the most likely to be victorious.—*See* BATTLE.

NAILS.—Soldiers require to keep the nails short. In cutting those of the great toe, they should leave them *square* at the sides. They will thus grow clear of the skin there, and avoid giving rise to the painful affection caused partly by the practice of cutting them too short, and wearing boots that are too tight over the part. *In-growing nail* is best treated by softening the nail by means of a poultice, then scraping it with a penknife, or piece of glass, until so thin at the edge that it becomes flexible; a small piece of cotton, sponge, or other soft material, should then be gently pressed under the embedded corner, and being renewed daily, a cure may be effected without the soldier having to go to hospital.

NIGHT.—Not only are men more liable to become attacked by illness at night from the fact of their own vital forces being less strong than during day, but the condition of the air is such that the influences of disease are more extensively prevalent than during daytime. Besides this, except when men are on duty, those who are out at night are, for the most part, after no good.

NOSE, BLEEDING FROM.—This is by no means uncommon among young soldiers. If slight, all that is needed is to bathe the face and nose with cold water, and in fact, a little bleeding of this kind not only is at times of no harm, but often actually an advantage, especially when there is "fulness of the head" present. If it continues long, or is to a great extent, the dress should be *undone*, the person laid upon the ground; his head and face bathed, or *rinsed* with cold water, or spirits and water if they can be got. As it

usually takes place, however, it is without any great danger to the person affected by it.

OFFICERS.—It would be well for individuals and for the interests of the service if the intercourse between soldiers and officers in the army were more intimate than it is. On active service common risks and common hardships bind them together to a certain extent, but, as a rule, the *genius* of both, and the circumstances of barrack life are adverse to the continuance of feelings so engendered. Perhaps these pages may be read by officers. If so, I would point out to them that soldiers are great discriminators of character, that they are sensitive of neglect or injury real or supposed, and equally so of consideration towards them. Considering also the relative position of officers and soldiers, the power left in the hands of the former, the powerlessness of the latter, it is nothing less than dastardly to treat them in a way that would be instantly resented by a man in civil life, however low his social position. The demeanour of the soldier towards his officer must at all times, and under all circumstances, be respectful, and that of the latter to him should always be considerate; for who has the soldier to whom he may look for help and guidance, if it be not his officer? Strictness on duty is quite compatible with urbanity.

ORDERLIES.—*See* INFIRMIERS.

PARADES.—*See also* DRILLS.—It is only on parade that soldiers can learn their duty. Their officers know that short and frequent parades fatigue and harass them less than such as are long and tedious. The one interests, the other wearies. The individual soldier, before going on parade, should be prepared in every way, so that he may, if possible, avoid *falling out.* He should, if health be considered, have a meal of some kind, as a cup of tea and a slice of bread, before early morning parade. If heated on parade, he should be careful on returning to barracks to

avoid exposing himself to a draught, or standing in the passages partially undressed.

PASSIONS.—A soldier who is unable to control or command his passions, if there be such a person, can hardly be considered to have reached the condition of a man. His mental development is below that of many of the so-called lower animals, inasmuch as the latter can, to a certain degree, exert control over theirs. Let a man ask himself what he gains by absence of this control. Sudden rage leads to crimes of violence; these to punishment and degradation. Indulgence in vice, to disease, permanent ill-health, inability to work, and hence to all the miseries of poverty. Are a few so-called pleasures worth such risks? Let each man ask himself the question. He may depend upon it that a steady quiet life, if less exciting than one of scrapes and self-indulgence, ensures far greater personal comfort, and the chances of health, as well as advance in his profession. True, the *fast* soldier sometimes reforms. The sooner he does so the better for his own health and well-being. The opinion cannot be permitted to remain unchallenged that a man cannot command himself if he but resolutely make the attempt. Of course he can.

PEMMICAN.—This preparation of meat is used by sailors in arctic voyages, by sportsmen in various countries, and may, under special circumstances of service, have to be so by soldiers. It consists of a mixture of 5-9ths of dried and pounded meat to 4-9ths of melted or pounded fat put into a bag or box while somewhat warm. Sometimes wild berries are added to it. This becomes so hard as to require to be cut with an axe. It is at first unsightly in appearance; but men soon become accustomed to that, and then it furnishes an excellent article of food. It is said to be a wholesome food, and under the conditions in which it is for the most part used, is certainly a great boon.

PERSPIRATION.—Not only does perspiration, if cleanliness

be not observed, become extremely offensive to the companions of a soldier, but it soon becomes injurious to his own health and to that of others in the same barrack-room with him. The matters thrown off from the body soon decompose, and unless removed from the body become literally an enveloping layer of rotting animal substances, at the same time that they fill up the pores in the skin by which the natural secretions of it would otherwise escape. As soon, therefore, as possible, a man who returns to barracks perspiring freely should have a good bath of soap and water. He should lay out his clothes to dry in the sun or near a fire. It is the neglect of such precautions that renders intercourse with the multitude of "the great unwashed" so extremely unpleasant to persons of delicate senses.

POISONING.—It is not often that a soldier swallows a poison. When he does however, his comrades should use such means as may be available to prevent, as far as possible, its taking effect. The first thing to be done is to induce vomiting if possible, as by giving warm water—whether salt or fresh—to drink, or tickling the throat with a feather. If an hour or upwards has elapsed between the time a man has swallowed a poison and he is seen, it will be useless to cause vomiting. All that then can be done is to give milk to drink, or sweet oil, or soap and water, or white of eggs, if they can be got. The further treatment for particular kinds of poisons can only be followed out in hospital.

PONCHO.—The American soldiers during the war in that country made extensive use of the poncho, finding it to act the double purpose of cloak and *tente abri*. It may also be used as a sheet. It consists simply of a blanket or piece of waterproof cloth, with a slit in its middle through which the head may pass, and the *poncho* be thus worn in rainy weather. For campaigning purposes it is in many respects better suited than the ordinary *tente abri*, as a man may make himself warm with it in bivouac. Officers can and

ought to provide themselves with a poncho whenever ordered on service or to *autumn manœuvres.*

PRECAUTIONS AGAINST DISEASE.—The soldier should know that however much may be done by his medical officers to suggest measures for the preservation of the health of *the whole* regiment, yet those measures will not be effectual with individuals unless each one takes the necessary care of his own health, and avoids the obvious causes of disease by which he may be surrounded. In hot countries, where the CLIMATE alone weakens the strength, avoid adding to the exhaustion by unnecessary or violent exertion. The morning and evening are the proper times for exercise in such places; but during the heat of the day, instead of spending the whole time in sleep, the body should be kept moderately active, either in games or recreations now so abundantly provided within barracks. To remain all day in a close barrack-room with a number of perspiring comrades is most injurious to health, and has been the cause in former days of a great deal of pulmonary consumption as well as of other diseases. Excesses in and errors of diet are to be avoided; so also is the use of unwholesome or tainted meats, fish, shell-fish, &c. See that you avoid sleeping in cellars or underground apartments; that you have free ventilation. Be careful with regard to clothing, wearing woollen whenever the climate is damp or "chilly." Drink coffee instead of spirits or beer, or, in very hot weather, use lime-juice and water to quench thirst. If you feel out of sorts, moderate the quantity of food usually taken, but do not delay to seek medical advice. As it is necessary to be up early to obtain the fresh air, so a siesta or short mid-day sleep is needed to enable a person to be out of bed at *gun-fire.* Excesses in drink, or, in fact, any abuse, sooner or later destroy health; they should, therefore, be most carefully avoided. When particular forms of disease are prevalent, men should guard against them as much as possible, living with the greatest care, avoiding dissipation of all kinds, and, as far as may be

possible, having cheerful occupations in their leisure hours. —*See* HEALTH, HYGIENE, &c.

PRICKLY HEAT.—This is a source of great suffering to many soldiers in India, especially the stout and first arrivals. It is most frequent during the rainy season, causing such a degree of itching and *pricking* of the skin as sometimes to interfere with sleep. The only measures that a soldier can take to guard against the affection include light clothing, abstinence from *heating* food, moderation in drink, and *quiet*, in so far as he can indulge in the latter. The use of *flour* as powder on the affected part relieves the itching. The use of the nails should be absolutely resisted.

QUININE.—This medicine is extensively used in the army in the treatment of ague, as well as for its prevention. For the latter purpose, it is issued as a regular ration in some unhealthy countries and districts. In Hong Kong, on the coast of Africa, and at some Indian stations it is so, more especially at Peshawur, great confidence being placed in its efficacy for this purpose by medical officers. The usual form in which it is given is that of quinine wine.—*See* AGUE, MALARIA, &c.

RAILWAY CARRIAGES.—Those on the broad gauge will carry 5 soldiers with arms on a seat, or from 50 to 60 per carriage; those on the narrow gauge 4 on a seat, or 32 per carriage. An American first-class car will carry 40. It is usual on some railways to allot carriages for 10 passengers to 8 soldiers only; those for 8 passengers to 6 soldiers. Railway carriages are now used extensively for the conveyance of sick and wounded, but require to be specially fitted up for the purpose, as they are in America and in Germany. During the Franco-Prussian war, the means and organization for conveying troops by rail attained a perfection hitherto unknown. Every arrangement was made at stations for supplying them with food and all

requirements, and elaborate instructions issued for the guidance of officers and men concerned:

RATIONS.—The following are the scales of rations, per man, allowed under the various conditions named, viz. :—

In the Field.—Bread 1½ lb., or biscuit 1 lb., fresh or salt meat 1 lb., coffee ⅓ oz., tea ⅛ oz., sugar 2 oz., salt ½ oz., pepper $\frac{1}{36}$ oz.

In Quarters.—Bread 1 lb., fresh meat with bone 12 oz., supplemented by extra messing.—*See* FOOD.

On Expeditions.—Various additions are made to the rations on the recommendation of the P. M. O. The meat ration is sometimes increased to 1½ lb., and compressed or fresh vegetables given, 2 oz. of the former or 8 oz. of the latter, or lime juice 1 oz. daily, when neither can be obtained.

In India.—The daily ration consists of 1 lb. of bread, 1 lb. of beef or mutton, 1 lb. of potatoes or other vegetables, 4 oz. of rice, ⅔ oz. of salt, $\frac{5}{7}$ oz. of tea, 1$\frac{1}{7}$ oz. of coffee, and 2 oz. of sugar.

On board Ship.—The scale of rations allows a variety, according to each day of the week, thus :—

Sunday.—12 oz. preserved meat, 1 lb. fresh bread, 1 pint porter, 2 oz. preserved potatoes, 2 oz. sugar, ½ oz. tea.

Monday.—12 oz. salt beef, 6 oz. flour, 1 oz. suet, 2 oz. raisins, 1 oz. compressed mixed vegetables, 12 oz. biscuit, 1 pint porter, 4 oz. sugar, ½ oz. tea.

Tuesday.—12 oz. preserved meat, 1 lb. fresh bread, 4 oz. rice, 1 pint porter, 2 oz. sugar, ½ oz. tea.

Wednesday.—12 oz. salt pork, $\frac{2}{9}$ pint split peas, 1 oz. compressed vegetables, 12 oz. biscuit, 1 pint porter, 2 oz. sugar, ½ oz. tea.

Thursday.—12 oz. salt beef, 6 oz. flour, 1 oz. suet, 2 oz. raisins, 1 oz. compressed vegetables, 1 lb. fresh bread, 1 pint porter, 4 oz. sugar, ½ oz. tea.

Friday.—12 oz. preserved meat, 12 oz. biscuit, 1 pint porter, 2 oz. preserved potatoes, 2 oz. sugar, ½ oz. tea.

Saturday.—12 oz. salt pork, $\frac{2}{9}$ pint peas, 1 oz. compressed vegetables, 1 lb. fresh bread, 1 pint porter, 2 oz. sugar, $\frac{1}{2}$ oz. tea.

Weekly.—$\frac{1}{8}$ pint vinegar, $\frac{1}{2}$ oz. mustard, 6 oz. pickles, $\frac{1}{6}$ oz. pepper. 2 oz. salt.

Spirits on board ship are now issued only on the certificate of the medical officer in charge.

Lime juice is issued on the recommendation of the surgeon; an allowance of sugar being given at the same time.

Autumn Manœuvres.—The daily ration of provisions and groceries will be as follows, the men being subject to the usual stoppages, viz.:—

Ordinary Rations: 1 lb. of bread or 1 lb. of biscuit; 1 lb. meat, fresh or salt. *Extra issue:* $\frac{1}{4}$ lb. of cheese, when deemed necessary and ordered by officers commanding divisions, for men on outlying pickets and in situations where difficulties exist in issuing the ordinary ration. *Groceries:* $\frac{1}{4}$ lb. bread, $\frac{1}{3}$ oz. tea, 2 oz. sugar, $\frac{1}{2}$ oz. $\frac{1}{36}$ oz. pepper.

The scale of rations given to the men of the *Red River Expedition* was a very good one. It consisted of the following, viz.:—1 lb. of salt pork, or $1\frac{1}{2}$ lbs. fresh meat; 1 lb. of biscuits, or $1\frac{1}{2}$ lb. of fresh bread; $\frac{1}{3}$ pint of beans, or $\frac{1}{4}$ lb. of preserved potatoes; 1 oz. of tea, 2 oz of sugar, $\frac{1}{2}$ oz. of salt, when fresh meat is issued, $\frac{1}{36}$ oz. of pepper.—*See* Food.

Recruits.—Although every possible care is taken in the selection of healthy young men as recruits, the fact is undeniable that large numbers break down in health during their training. The more delicate among them, and those who had been poorly fed prior to enlistment, should be treated more tenderly, as regards duty and *gymnastics*, than the strong and stout. Non-commissioned officers should encourage them to spend their surplus money in the purchase of wholesome articles of food. They should be permitted as much and as long continuous sleep and rest as

are practicable. When at drill or exercise the clothing, especially the tunic at the neck and breast should fit loosely or be open. The waist belt of the trousers should also be loose; otherwise young men are liable to become ruptured while undergoing drill. The future moral career of recruits often depends upon the discretion and tact shown by non-commissioned officers towards them; and inasmuch as physical health or disease are often direct results of a man's own conduct, the bearing of this subject on hygiene must be manifest.

REST.—Absolute rest and quiet is one of the most valuable aids to medical treatment of sickness, and is indispensable in that of wounds and injuries. It is equally important where great fatigue or exposure has been undergone; if indulged in for a little the effects of both are soon recovered from, while if not practicable, or not taken advantage of, illness of some kind, most probably fever of a low type will be induced, and perhaps the life of the person endangered. After fatigue spirits or stimulants do no good whatever. What is required is *rest*, and, it may be, a little extra food, to make up for the waste of tissue.

RINGWORM.—The affection commonly known by this name is of very frequent occurrence in India, attacking the "fork" and inner part of the thighs, and often causing great discomfort. It is believed to be more frequent among stout persons than among those of more spare habit. The best means of guarding against it seems to be care in keeping the parts as dry as possible, and being careful to wearing clean clothes. The application of the juice of a fresh lemon is a popular remedy in India, and probably of use when employed early in the disease. The affection once set in extends and becomes more obstinate the longer it is left untouched.

RUPTURE, OR HERNIA.—The general cause of this accident is violent exertion, as that of raising a weight, pump-

ing, &c. The occurrence is generally made known by a feeling as if something had given way in the groin, followed by a soft swelling sooner or later. The best thing in such a case to be done is to lay the patient on his back, and then by a little gentle handling the rupture usually disappears with a gurgle. At the earliest opportunity the man should consult the surgeon, who will apply for a truss. If at any time the rupture should come down and not admit of being readily put back, let the patient be placed upon a stretcher and carried to hospital. Delay for a few hours in such a case may render a dangerous operation necessary.

SCURVY.—The disease properly called scurvy is attended by bleeding from the gums, blotches of a blue colour on the legs, great weakness, and in extreme cases death. It was formerly common on board ship. It is now comparatively rare, but may take place not only at sea, but on shore, from great fatigue, exposure, and bad or insufficient food, or sameness in diet. Its best preventive is the opposite of the conditions just mentioned—that is, good, plenty, and variety in food, cleanliness, good accommodation. Juicy vegetables and fruit prevent and cure it. Wine and beer are also good for either purpose. Fresh meat, pickles, new potatoes, and vinegar are also good. The Esquimaux give *raw fresh* meat as a remedy for scurvy, and this method of treatment was used with success during the siege of Paris, when vegetables, fruit, pickles, or lime juice were all alike unobtainable.

SEA KIT.—The following are the orders in force on the subject of soldiers' kits for sea voyages—viz.:—

I.—FOR THE MAURITIUS, CEYLON, STRAITS SETTLEMENTS, CHINA, AND INDIA (IF *via* THE CAPE OF GOOD HOPE).

Frocks, blue serge	1
Trousers, blue serge, without stripes, pair	1
Neckerchief, cotton	1
Soap, marine, pieces	8

Soap, yellow	4
Pipe-clay, balls	3
Blacking, tins of	2
Brush, scrubbing	1
Knife, clasp	1
Bag	1
Needles and thread. set	1
Tobacco, lbs.	3
Cap, blue worsted	1
Shirts (in addition to kit) { check	2
or	
flannel	1
Belts, flannel	2

(Not required when flannel shirts are worn.)

II.—FOR INDIA (IF *via* EGYPT).

Frock, white drill	1
Trousers, ditto, pair	1
Soap, marine, pieces	4
Soap, yellow	4
Pipe-clay, ball...	1
Blacking, tin of	1
Brush, scrubbing	1
Knife, clasp	1
Bag	1
Needles and thread, set	1
Tobacco, lb.	1½
Cap, blue worsted	1
Water-bottle	1
Belts, flannel	1

(For further particulars see Horse Guards General Order 76, October 1867).

III.—FOR AUSTRALIA, TASMANIA, AND NEW ZEALAND.

Frocks, blue serge	1
Trousers, blue serge, without stripes, pair	1
Neckerchief, cotton	1
Socks, worsted (in addition to kit), pair	1
Boots, knee, pair	1
Soap, marine, pieces	12
Soap, yellow	4
Pipe-clay, balls	3
Shirts (in addition to kit) { check	2
or	
flannel	1
Brush, scrubbing	1

Blacking, tins of	2
Knife, clasp	1
Needles and thread, set	1
Tobacco, lbs.	3
Bag, in lieu of havresack	1
Cap, blue worsted	1

IV.—FOR THE CAPE OF GOOD HOPE.

Frock, blue serge	1
Trousers, blue serge, without stripes	1
Bag, in lieu of havresack	1
Soap, marine, pieces	4
Soap, yellow	2
Needles and thread, set	1
Pipe-clay, ball...	1
Tobacco, lb.	1½
Cap, blue worsted	1

V.—FOR THE WEST INDIES, CANADA, AND ST. HELENA.

Frock, blue serge	1
Trousers, blue serge, without stripes, pair	1
Bag, in lieu of havresack	1

SERVICE.—A soldier ordered on service should, as far as in his power, be provided with new articles of clothing. He should take nothing with him that is old. His boots and socks should be well fitting, the latter warm. His *housewife* should be well supplied. He should have with him a strong pocket-knife, provide himself with a small bottle of salt and pepper for seasoning his food, as also a toothbrush, the use of which he will find very refreshing. His officers of course provide for his larger wants which are supplied in accordance with "Regulations."

In order that the soldier may be enabled to withstand the fatigues of service and carry the weight of kit, arms, and accoutrements he must be well fed, and amply clothed. It is the duty of officers to see that the men are well housed, that they have means of amusement and of diverting their minds from the inevitable trials and discomforts of war. Before going on "duty," the soldier should have a hot meal, either solid or consisting of coffee

and bread as the case may be. They will now find the advantage of each man being able to cook for himself. Of course the responsible officers will see that their men are not more fatigued or harassed than circumstances of the service render absolutely necessary, and experience has shown the impropriety of sending the same men into battle on two successive days, unless they have been brilliantly successful in the first. Among the instructions laid down for men on service are the following. Avoid irregularities, learn to mend your own clothes, and even boots, keep your hair short, preserve cleanliness of clothes and person as much as possible, washing the whole body as often as you can; avoid as far as possible exposing yourself to the causes of diseases incidental to service, be careful as far as possible that boots, socks, and clothing are in good order. Further good advice is that given to the French soldier, namely, to cook from time to time whatever food he may have in his mess-tin, or if he has not time for that, to grill a little meat if he can; to have as a small reserve store with him from day to day, as a little cooked meat, a little bread or biscuit, salt, and pepper. If he can carry a small tin of preserved meat, or meat essence, he may always be able to prepare for himself, a *savoury*, if not very nutritive meal.

SHIP, ON BOARD OF.—The general regulations of the army contain instructions for the good of the mass on board, and individuals should endeavour to give effect in their own persons to the spirit of those instructions, remembering how very fearful a thing it is when an outbreak of sickness takes place while a vessel is far away at sea. Cleanliness and free ventilation "below" are the great safeguards to be observed. Disinfectants are recommended to be used, but they prove no sufficient substitutes for cleanliness of the ship and cleanliness of each individual on board. In a hot climate no harm whatever need be feared from sleeping near a windsail or a hatchway. Draughts of air are then both grateful and beneficial. When, however, men sleep on deck and *not* under an

awning they expose themselves to be attacked by various diseases, as dysentery, rheumatism, moon blindness, &c. They should spend as much of their time as possible on deck, indulging in such exercises and amusements as they can. Better for them to get an occasional wetting, with plenty of exercise, than to be dry and lazy. During *washing decks* in the morning men should freely *souse* themselves, so long as the weather admits of it. As preventives against scurvy, they should use all the vinegar, pickles, and lime juice they can get.

It is injurious for men in a state of perspiration to rush on deck insufficiently clothed, and thus expose themselves to the draughts of wind, or it may be rain; so also it is for a man to fall asleep under such circumstances. Although free ventilation "below" is desirable, yet the mouths of windsails ought to open at a level *under* the cot in which a man may "swing." It is at all times desirable to keep the lower deck as dry as possible, and to avoid having any wet clothes below. A man if obliged at night to go on deck, should be careful to dress himself sufficiently, for however short a time it may be. On arriving at foreign ports the greatest care is necessary in regard to meat, fish, and fruit offered for sale by natives. Pork and fish, are as a rule, very dangerous under such circumstances, and ought to be avoided. Cleanliness of clothing and person is necessary, and must be carefully attended to. A man sick on board ship requires every consideration to be shown him. Under the most favourable circumstances he cannot possibly have all the comforts obtainable on shore.

SHIRTS.—Perhaps for all purposes, and having regard to the life and work of a soldier, woollen shirts are preferable to others. In cold weather or climates there is no question on the subject. In hot, they are also best suited for preventing sudden chills after severe exertion; but then their material should be of light quality. Occasionally men are met with whose skin is so tender that *flannel* is absolutely unbearable. In this respect, and the difficulty of washing it

properly, this material is not suited for general wear by the soldier; but there are more than one kind of substance, partly composed of wool and partly of cotton, that are in all respects suited for wear when the thicker and coarser could perhaps not be borne next to the skin.—*See* CLOTHING.

SICK.—The proportion of sick to strength usually looked for varies much according to condition and circumstances. In the United Kingdom hospital arrangements are made for 6 per cent. effectives; in India, for 10, 12, or more, according to station; on the ordinary march, 5; on service, 10. There are conditions under which these ratios are far exceeded, as during epidemics, and at some notoriously unhealthy stations. The fact may be mentioned, however, that it by no means follows that a high rate of *sickness* is attended by a high rate of mortality. The reverse is sometimes the case.

SICKNESS.—No man when attacked with sickness should delay an hour in seeking relief. In many instances a fatal, or at any rate, severe, attack may be warded off by timely medical aid. It is a delusion to believe that real illness can either be *shaken off* or *fought against.* It is but an indication of our common mortality, and no man can either shake off or fight against mortality. Immediately a soldier becomes sick he should be removed from the barrack-room and sent to hospital, this as much for his own well-being as for the comfort of his comrades.—*See* DISEASE, ILLNESS, &c.

Sickness on Service.—Soldiers should know that on service sickness causes more inefficiency and more deaths than occur by battle; and in order to avoid the chances of being themselves struck down it is well that they should know its principal causes. The forms of disease most prevalent during time of war are *typhoid* and *typhus fever* and *dysentery.* Among their most prominent causes are bad food, over-crowding, fatigue, and exposure to the weather.

The object of military *hygiene* is to indicate the means by which these influences may be counteracted; and it behoves individual men to fully observe the regulations laid down from time to time with this object, knowing that if once they become attacked by illness, their recovery is, under such circumstances, at all times a matter of distant uncertainty.

SKIN DISEASES.—The extent to which these prevail in the army is now small compared to what was formerly the case, the improvement being chiefly due to the greater care now paid to cleanliness of the person. They are by no means extinct however, but are best guarded against by cleanliness of person and of clothing, avoiding the use of woollen soiled with perspiration or otherwise, avoiding intercourse with persons of dirty habits in public-houses or other places of common resort, never washing or bathing in water that has already been used, or drying the face or body with a towel already soiled. Some of these affections are very catching, and all are more or less difficult of cure unless treated very early in their attack.

SLEEP.—A soldier ought to have eight hours sleep out of every twenty-four. This becomes of course impossible when he is on guard, but should as far as circumstances allow, be made up for afterwards. The requirements of the service and consideration for the health of the men as a body render it necessary that they keep early hours. In India, however, as a regular thing, and the practice is allowed in some regiments at home, the men are permitted to make down their beds after dinner for an hour, a measure not only for their comfort, but for their health. On the line of march, as it is necessary to be up early, so men should go to sleep early. Men should not be unnecessarily *roused* out of their sleep; hence any noise or *larking* in the barrack-room at night ought to be checked. There is of course a difference between a man having the quantity of sleep that is necessary for health, and being "heavy headed."

A good soldier must necessarily be an active man. Before going to sleep at night, health and comfort alike require that a man should undress, and put on a different shirt from that worn during the day.

SNAKE BITE.—The means recommended to be taken in the case of bite by a poisonous snake is to cut or *burn* the part immediately; the latter is perhaps the preferable plan. A ligature or handkerchief to be tied as tightly as possible around the bitten limb between the part bitten and the trunk of the body. The person to have plenty of spirits given to him, and if possible kept walking. If the snake be really poisonous, and of large size, the case will as a rule be desperate indeed.—*See* BITES.

SOAP.—So much of personal comfort depends upon a soldier being provided with soap, that he should, under all circumstances take care to have a piece readily available. On service he should carry it in his havresack, remembering that the late General Sir C. Napier considered this article to be of such prime necessity that, according to him, all a soldier needed in the shape of kit was "two towels and a piece of soap." There often happen occasions when, from one cause or another, it is impossible to obtain soap, as during some military expeditions. Under such circumstances, bran, oatmeal, peasmeal, clay, more especially fuller's earth, may be used as substitutes. In fact, in India the natives find the mud of the Ganges serves all the purposes of soap. The ashes of many plants, if boiled or mixed with water, yield an alkali which, for washing clothes, may be used in place of soap, and there are several plants met with in foreign countries which, when bruised and mixed with water, form a *lather*, having all the properties of that from ordinary soap. If a man wishes to wash his person thoroughly and has no soap with him, he had best smear himself well with mud, and then proceed as if he were taking his bath in the ordinary way. Fancy soaps are coloured by various chemical substances that are

injurious to the skin; hence the best kinds for general use are the white and yellow. In India the *soap berry* is used by the natives, and serves all the purposes of the article whence it takes its name.

SOCKS.—For all purposes, woollen socks are better than cotton for use by the soldier, notwithstanding that they render the feet soft on the march, by their warmth, and cause blisters unless they fit well and are in good repair. Men should be careful when selecting their socks that their size is suited to the foot, and when holes occur in them, the darning should be carefully done, otherwise the part that is mended will irritate the foot. Foreign soldiers use socks very little. The Germans use a long bandage of linen instead. Practice enables them to apply it so neatly that it supports the foot without irritating it. On the march and active service it is easily kept clean and readily washed. Pieces of linen or cotton cloth may also be used as substitutes for socks. These should be a foot square, be washed every day, and smeared with tallow. If put on neatly they will stand a march without a wrinkle taking place in them. To put them on, the foot is placed on one of the diagonals, the triangles on the right and left are then folded over, then the triangle in front of the toes, and with a little practice these can be so arranged as to be without a wrinkle, The use of socks that are soiled "soften" the feet; if full of holes, they cause blisters, and, moreover, only insufficiently protect the feet. When they have become wet, they ought to be changed with the least possible delay.—*See* CLOTHING.

SPACE.—According to Regulations, soldiers are allowed space at the rate of 600 cubic feet in barracks, and 400 in huts. On the march, a cavalry soldier occupies one yard, an infantry man 2 feet, irrespective of the space between troops, companies, and regiments; in hospitals, the cubic space allowed is 1,000 to 1,500 feet, according to climate, with 80 to 100 superficial feet. On board ship, 52 cubic

and 10½ superficial feet. The necessity of ample *space* is very nearly as great when troops are on the march or camp as when they are in barracks. The occurrence of *heat apoplexy* among those in India is found to be more frequent when marching in close column than when in open order. Epidemics also spread among crowds at places of pilgrimage quite as much as among those in barracks or towns.—*See* ACCOMMODATION.

SPIRITS.—The action of spirits upon the stomach is literally to *dry* up its tissues and check the secretion of its natural juices upon which digestion depends. Hence it is that a man who is addicted to spirit drinking is unable to take proper food, or to digest it when he has taken it. A good many years ago the surgeon of a regiment in India, where spirit-drinking prevailed to a fearful extent, invited the men to come with him to the *dead-house,* and see for themselves in the stomachs of those who died, the effects of spirits, and it is said that the measure did more than all others that had been taken to check the vice. Under some conditions, such as cold or wet, a *small* dram may for a time be *grateful,* but that even then it is unnecessary and injurious in the long run has been proved by late experience. Thus, men exposed in the outposts around Paris during winter found in practice that the use of spirits really rendered them more sensitive to cold than they were before, and many accordingly abandoned them for *coffee.* It has also been found that in ordinary marches men who are habitual spirit-drinkers are unable to stand fatigue so well as the more temperate, and that in hot countries such as India, the very great majority of cases of *Heat* APOPLEXY that prove fatal occur in confirmed spirit-drinkers. Medical men know well that the practice of taking *nips* to prevent *cholera, dysentery,* and other diseases affecting the bowels, have in reality no such property unless they contain spices and other medical remedies, and when the latter are taken, they should be so as *tinctures,* under the prescription of the medical officer, instead of really fur-

nishing an excuse for indulgence in strong drink. Another excuse for taking spirits is that a man needs a a dram of *bitters* to stay his stomach. A healthy stomach needs no bitters, and if deranged, the chances in the person of a soldier are that it is so from indulgence in spirits, in which case bitters will by no means improve it. Fortunately spirits are no longer obtainable in canteens. They were abolished in the American army; in the Mutiny campaign men marched during the hot season best without them; hence they may be disused in our army with the very best results to the soldiers both as regards health and character. In some foreign countries, especially in the Mediterranean, India, and China, various kinds of *spirits* are sold to soldiers by native vendors, the effects of which are maddening, and most injurious to health. For special exceptions see FOOD and MALARIA.

SPRAINS.—These are but the first stage of DISLOCATIONS. They may be caused by a false step, a twist, a fall, &c. Their actual nature consists of a stretching or twisting of the ligaments which retain the joints in their shape and strength. They are often very painful, and followed by great swelling of the parts. They sometimes render the person suffering from them unfit for duty for weeks, and by no means seldom unfit him altogether to remain in the army, more especially when the knee or ankle is the part affected. The first thing to be done is to lay the person in such a position that his weight is taken off the injured part. Cold water or spirits and water should be applied, and then the man carried to hospital. Soldiers should know that unless they remain quiet while under treatment in hospital for sprains of the ankle and knee, obstinate or incurable disease often results from their own indiscretion.

STABLES.—Such places should be carefully avoided by soldiers on service. They are said to have been used as temporary sleeping places during the American war, and they were so during the Franco-German, but with suffi-

ciently unfavourable results to show how necessary it is to avoid similar dangers in future. Cases of GLANDERS occurred among the troops who had used them, those attacked by this terrible disease dying most miserably.

STARVATION BY HUNGER.—A strong man will not actually die from starvation in less than eight to ten days. If, therefore, a soldier should be accidentally left in such a position, he should bear this in mind, and surely help of some kind will reach him in that time. When help does come it must be carefully applied. Stimulants must be avoided, milk given—at first in small quantities, the person placed if possible in a bed, but not near the fire; then food given by little and little.

STINGS, whether by wasp or scorpion, are conveniently treated by applying to them the oil scooped out of a tobacco-pipe. Spirits, whether brandy or rum, may also be applied. If a soldier can obtain a little powder of ipecacuhana, its application to the part is a ready and effective cure. Hartshorn or *Eau de luce* is also excellent. Honey or sugar is said to be good as a remedy.

STRANGULATION, whether arising from HANGING or not, as in attempts at suicide, should be treated like DROWNING, with the addition that a little cold water, or spirits and water, should, from time to time, be dashed upon the face and chest.

STRAW.—If waterproof sheets are not issued in *camp*, straw for bedding will be given for troops halted for any considerable time, at the rate of 72 lbs. per 5 men, or 216 lbs. per bell tent. Half the quantity will be given to replace one-third portion at the end of 8 days, a complete change being made at the end of 24. Straw readily accumulates dirt and insects, and becomes offensive. It should therefore be taken outside the tent as often as possible,

shaken, and aired. The men should avoid the filthy habit of spitting upon their camp straw. The French soldiers readily make their straw into mats by means of some string. This is preferable to loose straw, as they can often be hung up in the sun and beaten clean every day. —*See* CAMP.

STRETCHERS, called also BRANCARDS. — In placing a wounded or injured man upon a stretcher, care and tenderness in handling him are very necessary. *Stretcher-bearers* are regularly taught how to perform this duty, but regularly trained men are not under all circumstances available. The stretcher being placed on the ground alongside the injured man, so as to do away with the necessity of disturbing him, as far as possible, the first care should be to gently support any limb that may be broken, so as to prevent it from dangling or being painfully moved. Besides the man or men required to support the injured limb, two are required to move a man comfortably on to a stretcher. One, of these stands over the patient in such a way that he can get his arms well round his body, locking his fingers behind; the other does precisely the same thing round his hips. If the injured man can raise his arms so as to clasp the neck of him who stands in front, so much the better. Any how, the two supporters having got themselves into position to give them *purchase*, they should both together raise the patient, at the same time moving in unison, so as to lift him directly over the stretcher. He should then be lowered very gently upon it, something placed under his head, his position rendered as comfortable as it can be, and then removed to hospital.—*See* CARRYING. *See also* FRACTURES. Another convenient plan is to place the stretcher lengthways at the feet of the patient. A man places himself at either side, so as to get one arm well under the shoulders, the other under the hips, and having done so, clasps the hand of the one opposite. The third bearer takes care of the injured limb, and thus the patient is gently raised and slipped on the brancard.

SUN, EXPOSURE TO.—Although there are men who do not appear to suffer from exposure to the fiercest rays of an Indian sun, the rule decidedly is, among soldiers, that such exposure is extremely injurious, and often followed by fatal results. If under the influence of spirits, beer, or other intoxicating liquor, they are especially liable to suffer from exposure; therefore, the regulations are very properly framed with a view to discourage the practice of soldiers being out of doors while the power of the sun is great.

SUNSTROKE.—*See also* HEAT APOPLEXY.—This is not uncommon among soldiers when marching during very hot weather. It chiefly occurs, however, among those who have indulged much beforehand in spirits or beer, being rare indeed among the absolutely sober. In India it has been found to take place when troops march in close column more than it does when they are in open order. Its signs are, the man becoming insensible, the face deadly pale or red, and *suffused;* the head and body intensely hot; the eyes red, and turned up; the breathing, at first rapid, afterwards slow and stertorous or snoring. The face and limbs are sometimes convulsed. The first thing to be done is to loosen the clothes, take off the pack, place the man in a comfortable position upon the ground in an open space, so that plenty of fresh air may reach him. Throw plenty of cold water upon the head and body. If a bottle of smelling salts is obtainable, place it, from time to time, under the nostrils, and send for a medical officer. To prevent it the best means are temperance, and during necessary exposure to keep the head and body moist by occasionally sponging, or throwing cold water over them..

SUSPENSORS.—The use of these articles, or *suspensory bandages* as they are sometimes called, is for a mounted soldier almost an actual necessity. Certainly every such man should use one, and there are many in the unmounted branches, especially while serving in hot climates, who do use them; whenever they are used, benefit will also be

obtained from bathing *the parts* requiring them, with as cold water as is procurable.—*See* DRAGOONS.

SWIMMING.—Is not only an agreeable exercise, but it strengthens the constitution, gives power to the muscles, and developes the chest. A good swimmer may have it in his power to save a comrade, and thus earn a reward for a daring action. Men, however, until able to swim should bathe in company with some who can do so, and themselves avoid being foolhardy in so dangerous an element as water. In the course of military operations soldiers have often to swim across rivers or canals. When this is attempted, each should use a float of some kind, as a piece of wood, a bunch of reeds, or even corked bottles, or cooking vessels, any of which placed under the chest will be of material assistance to him. If under such circumstances a man is utterly unable to swim, floats should be placed under his arms and lashed firmly to him; he must then be *towed* across. For short distances, and provided the man who is unable to swim has sufficient confidence, he may simply place a hand upon each hip of a comrade who is able to swim well, and thus be guided across. A kind of float may also be made of a piece of intestine inflated and tied by a string at intervals, so as to make a swimming belt, by being placed around the chest under the armpits.

For a cavalry soldier to swim his horse and himself across a stream the best way is after getting into the stream for each man to hold on by the mane or tail of the horse, splashing water in the face of the animal with the free hand so as to guide him; of course, such a necessity is now-a-days of very rare occurrence, yet it may arise again as it has often done before. *The Queen's Regulations* direct that swimming shall be taught as a military duty, and that a list of swimmers shall be kept in each company, to give aid if need be on the occasion of bathing parades.

SWORDS, CUTS BY.—Bring the sides of the wound together with both hands and keep them in that position,

covering the part with some folds of cloth soaked in cold water. Place the wounded man in such a position that the tendency of the wound to be stretched open will be least. If the wound is near a large joint, as the knee, the lips should be carefully held together until the arrival of a surgeon.—*See* WOUNDS.

TEETH.—Neglect of the teeth, so often seen among soldiers, is not only most offensive to their neighbours, but injurious to the men's own health. The breath suffers, the teeth themselves rot and decay, and the health of the person is impaired by the presence, week after week, of decomposing matters around the teeth. All men who value their own health, cleanliness, and comfort—not to speak of their personal appearance in the eyes of others—ought carefully to brush their teeth at least twice a day, using on each occasion a rough hard brush and toothpowder of some kind. The harder the brush and the harder the brushing, the better ultimately for the state of the gums and teeth. When toothache occurs, the man should consult the surgeon. The best toothpowder for use by the soldier is charcoal, or equal parts of charcoal and camphorated chalk.

TEMPERAMENT.—Much of a man's character depends upon his natural *temperament.* He may certainly be able, by the exercise of self-command, to modify his character, but when he does so it is often at the cost of pain and suffering to himself that his friends and comrades little know of. In dealing with soldiers, therefore, it would be well were it always possible to take their natural *temperament* into account, and with this view the following summary is given, viz.:—

1. *Sanguine,* characterized by moderate plumpness of person and firmness of flesh, hair red or light chestnut, eyes blue, complexion florid, skin soft and thin, habits active, countenance animated, passions excitable, mind volatile and unsteady.

2. *Phlegmatic*, by roundish body, softness of muscles, fair hair, light blue or grey eyes, the functions of body and mind inactive and dull.

3. *Bilious*, by moderate fullness and much firmness of flesh, harshly expressed outlines of person, hair black, eyes and complexion dark, features strongly marked and decided; much energy, both of body and mind.

4. *Nervous*, by small and spare frame, slender muscles, quick movements, pale countenance, delicate health, the whole system active, senses acute, thoughts quick, imagination lively.

5. *Melancholic*—allied to *Bilious*—characterized by calmness and serious tendency of mind, tenacity of purpose, and tendency to take a gloomy view of matters.

These characteristics are only very briefly stated; yet it must be evident that the manner of dealing with the subjects of the temperaments noted must and ought to be very different; that, for example, what would make little or no impression upon a *cold* phlegmatic person, would render desperate the man of *nervous* and sensitive disposition. In these respects their enumeration is considered within the intended sphere of this work. Medical men are aware that the subjects of particular temperaments are liable to particular forms of disease.—*See* Food.

Tents.—The Franco-German war proved that a campaign may take place in Europe and the troops be unprovided with tents. The Germans used none; and the time taken up by the French in packing their *tentes abri* is believed in some instances to have been the cause of their defeat in particular actions. So in America, during the war of the Secession, tents were little, if at all, used. In hot countries, however, as India, during the greater part of the year, it would be death to the men were they to march without tents. The following are the tents in most general use:—

1. *Circular*. Used everywhere by our troops except in India. It is 10 ft. high, 12½ ft. in diameter at the base;

the ropes extend 18 inches all round; it is made of canvas, consists of a velise, pole, bag containing 42 pins and 2 mallets, and weighs 74 lbs. It is supposed to contain 15 men.

2. *Tente abri* of the French, consists of 2 sheets, 2 poles, 7 pins; weighs about 11 lbs., and holds 2 men.

3. *Bengal tent.* One to every 16 men.

4. *Bombay tents* hold 22 men each.

5. *Madras tents* hold 25 men each.

Hospital marquee is intended to accommodate 18 sick, but this number is really too great. It contains 3,836 feet of cubic air; weighs 512 lbs.

THIRST.—Soldiers should know that when fresh water is not to be had thirst may, for a time at least, be satisfied to some degree by bathing in salt water, a portion being thus absorbed by the skin. To prevent the risk of thirst on service, they should take a good drink before starting in the morning. It is also recommended, when marching in a hot and dry country, to place a cloth over the mouth. It is said that a small piece of fat put into the mouth from time to time has a similar effect. If fresh water is to be had, although in very small quantities, take a little, even if only a tea-spoonful, at intervals. This will stay great thirst for a time. The danger of taking large draughts of water or other liquid, to satisfy thirst on the march, is well known and ought to be avoided. One plan of quenching thirst with a small quantity of water is said to be to take a mouthful, and, without swallowing it, to breathe over it by the mouth, letting the breath escape by the nose, repeating this operation four or five times with each mouthful of water. The air thus moistened, passing over the fauces, relieves the feeling of thirst. The feeling of thirst is always greater in hot climates than in those that are temperate; it is also increased after partaking of salted or highly seasoned food. In either case, small quantities of liquid, taken at short intervals, will be more likely to quench it than one or two large draughts.

THROAT, SORE.—A common affection, as a result of exposure to wet and cold. The best provisional treatment is to surround the neck with fomentations or poultice, to inhale the steam of hot water, and take hot drinks. To avoid the risk of attack, be careful that clothing, including stockings, be sufficiently warm. If wet, they should be changed without delay. The use of a gargle, made with a little vinegar and red pepper, sometimes has the effect of checking an attack of this kind.

TOBACCO.—Without being a necessity, and although when used to excess its effects are decidedly injurious to health, still there is no doubt that its moderate use supplies a want that would be otherwise greatly felt by many soldiers. It moreover soothes and gives men enjoyment of which it would be very much to be regretted if they were to be deprived. It is often said that the practice of smoking tobacco prevents the smoker from being affected with *malaria*, and protects him against infection; but there is really no proof that it does the one or the other. The immediate injury to health caused by tobacco in excess arises in the shape of disordered digestion, palpitation, *nervousness*, and a sense of *stupidity*.

TREES.—A grove of trees although perhaps good as shelter during a temporary halt in the heat of the day as in India, is objectionable for long occupation, and as a rule for *camp* or *bivouac* during a night. It acts as a shade from the sun, and as shelter from the rain, but is a source of risk in a storm, partly on account of the wind eddying round individual trees, partly from the liability of some to be thrown down, and partly from their liability to act as conductors of LIGHTNING in storms. All these considerations have no relation to the military advantages of trees, whether singly or in groves. No doubt, however, a grove of trees prevents intense heat or intense cold, and in either respect has its peculiar advantage. A belt of trees between barracks and a marsh acts as a barrier against *malaria*.

Also, trees in the vicinity, if not very close, are agreeable and wholesome in all climates.

URINE, RETENTION OF.—A man, probably has suffered from stricture, or indulges in a debauch. He finds himself unable to void his urine. He must at once prepare to be taken to hospital. In the meantime he may apply hot fomentations over the lower part of the belly. He should avoid taking drinks of any kinds, more especially spirits, as these by increasing the secretion of urine will materially add to the existing evil. The affection is a serious one, and will in all probability require the use of instruments.

VACCINATION.—The orders in regard to vaccinating all recruits who join, and the families of such as are married with leave are very strict. Soldiers should know, however, that to the care with which vaccination and re-vaccination are performed in the army we must attribute in a great measure the comparative rarity of small-pox in the army. Surgeons of regiments have greater means than most civil practitioners possess of obtaining pure vaccine matter, as they know the history of the parents of the children from whom it is usually taken, and the fact, of no case having yet occurred of *disease* being inoculated in vaccination from a soldier's child speaks for itself. It should be understood that vaccination does not altogether prevent the occurrence of small-pox. It diminishes the liability to attack and decreases the risks of death among persons attacked. The practice of re-vaccination is also compulsory in the army, and by way of pointing out to the soldier the good results that follow the operation, the following extract from a Report on the subject by the Directors of the Small-pox Hospital, at Hampstead, is appended.

"The necessity of re-vaccination when the protective power of the primary vaccination has to a great extent passed away, cannot be too strongly urged. No greater argument to prove the efficacy of this precaution can be

adduced than the fact that out of upwards of 14,000 cases received into the hospital, only four well-authenticated cases were treated in which re-vaccination had been properly performed, and these were light attacks. Further conclusive evidence is afforded by the fact that all the nurses and servants of the hospital, to the number at one time of upwards of 300, who are hourly brought into the most intimate contact with the disease, who constantly breathe its atmosphere, and than whom none can be more exposed to its contagion, have, with but few exceptions, enjoyed complete immunity from its attacks. These exceptions were cases of nurses or servants whose re-vaccination in the pressure of the epidemic was overlooked, and who speedily took the disease; and one case was that of a nurse, who, having had small-pox previously, was not re-vaccinated, and took the disease a second time."

VEGETABLES.—The use of vegetables as food is absolutely necessary in order to keep the man in health, and when either from our not taking them, or their not being procurable, the bodily system is deprived of them *scurvy* is the result. In India where during some seasons they cannot be procured, the Government authorises an issue of lime-juice being made, and in this way averts the evils that would otherwise arise. In some countries there are numbers of common weeds that can be used as substitutes for ordinary vegetables. The French soldiers are adepts at discovering such, and it would be an excellent thing if ours were equally so. The most wholesome vegetables are potatoes, cabbages, and turnips; next to them carrots, parsnips, &c. Many vegetables can be used cold, mixed with vinegar, as salad, and it is a pity that they are not more used than they are by English soldiers.

VENEREAL DISEASES.—In whatever form these diseases occur, recovery from them must always be looked upon as uncertain. By their ulterior effects they embitter and

shorten the life of their subject, and in the event of his marrying may affect his wife and children, being transmitted from him. Concealment or delay in seeking treatment increases those risks. Treatment by quacks and such persons, as soldiers too often resort to in many cases, increase the evil results of the disease, hence the regimental medical officer ought always to be resorted to. Inasmuch as there is only one way in which the affections are contracted, so it becomes an easy matter, with the exercise of a little moderation, to avoid them. The excitement of a *spree* is certainly not worth its attendant risks.

VENTILATION.—If soldiers would but believe it, fresh air is the best, as it is the natural purifier of rooms rendered temporarily offensive by the presence of men. The ventilators provided in barrack-rooms are most serviceable in preserving health, provided they are in suitable working order. The practice of *stopping* them at night only injures the men themselves, by preventing the escape, it may be, of odours caused by the presence of one or more intoxicated men. When the troops quit their barracks for drill in the morning, the windows should be thrown completely open. It may be useful for the men to know that with their breath and perspiration very minute portions from their lungs and skin are thrown off; these, if not removed by ventilation, cling to the walls and furniture, decay, and are inhaled again by the men in breathing. Thus they can understand how diseases, consumption, and others become propagated among them. Cold weather ought not to be made an excuse for the neglect of ventilation, whether of barracks, huts, or tents. The officers under such circumstances will apply for the issue of extra blankets. If a ventilator acts improperly so as to admit the draught or rain directly upon a person, the defect should be reported, so that the necessary alteration may be made. In pitching tents care is of course taken that sufficient distance exists between them to admit of free circulation of air among them. Grates and fire-places are efficient means of

ventilation in rooms; hence the latter should be left open when fires are discontinued.—*See* AIR, BARRACKS, &c.

VOMITING may arise from violent exertion, a chill, great annoyance, improper or too much food, from what is commonly called a *bilious* attack, and so on. It may also take place as the commencement of a severe illness or fever, and during the prevalence of CHOLERA may be itself the first sign of the person being seized with that disease.

In order to give temporary relief to the person attacked, undo his clothes, after the first great effort, give him a little warm tea or cold water. Either of these is preferable to spirits and water. If the vomiting persists, apply a hot brick or bottle to the stomach, while arrangements are being made to send the man to hospital. Of course, care will be taken when applying the brick that it be wrapped in a blanket or some other woollen cloth, so as to prevent it from coming directly in contact with the skin, and perhaps burning it.

WATER.—That for drinking or cooking purposes should be fresh and clear. That obtained from wells or springs is the purest, and in an enemy's country that from the latter source should be used if obtainable, as it is least likely to contain impurities. That from the middle of a stream is purer and better than such as is got from near the sides; that from marshes and ditches should be avoided. Where stagnant water *must* be used, a piece of bread thrown into it and allowed to remain for a few minutes, removes in some degree its bad qualities. If muddy, it should be passed through a flannel or linen cloth, or through a handkerchief. It may also be purified by being passed through a bed of sand and charcoal some inches thick, by putting a little alum and charcoal in it, or by the use of the nut used by the natives for that purpose (*Strychnos ptatorum*). In many parts of India, wells and tanks furnish the only means of water supply. The French add a little vinegar or spirits to the water of inferior quality, and believe that in

some degree these arrest its bad qualities; it is considered in England, however, that they do not. No man should start on a march without his water-bottle being full, and he should further avoid the risk of thirst by taking some liquid at the same time, whether as tea, coffee, or water. It is considered that in the course of a day in a hot country two quarts of water is the smallest quantity a man drinks.

The allowance of water for all purposes in barracks is as follows, viz.: officers and men at the rate of 12 gallons per head; women, 12 gallons; children, 4 gallons. Horses, in the cavalry, 8 gallons; in artillery and military train, 10 gallons. At sea, the common allowance is, 6 pints, per head, on board ship, while out of the tropics; 1 gallon in the tropics. For horses, 8 gallons each.

Troops on the line of march should carefully avoid drinking water directly from streams or brooks. Leeches and other noxious creatures and things are not unfrequently taken into the mouth or get into the nostrils. The presence of a leech may cause weeks of suffering, leading to ill-health. The water should always be drank from a vessel, or in the absence of one, taken up in the hands, or filtered through a handkerchief.

WATERPROOF.—The use of a waterproof sheet between a man's person and the ground in the bivouac, is unquestionably beneficial. So, of course, would one be over him under such circumstances, provided the climate or season is temperate. The former would equally be useful in a hot climate, but then the latter would be unbearable. The good health of the troops during the American war was in a great part attributed to the use by them of waterproof sheets and cloaks. The French troops in Algeria are said to have suffered from rheumatism from wearing them, as while the rain was kept out the perspiration was kept from evaporating, and so, liability to a chill induced. On the West Coast of Africa waterproof clothing was not used, at any rate when I was there, but instead of it, Europeans

wore suits of thick blanketing when likely to be exposed to rain. When this kind of material is used, the flexible description is preferable to the more resisting. A sheet, say 7 feet by 4, with eyelets along one side can by means of a cord run through them be converted into a cape when required.

To render cloth waterproof, rub soap suds into it on its wrong side, work them well in, then dry and rub in a solution of alum. The soap is by this means decomposed, and its oily part distributed among the fibres of the cloth. This recipe is taken from instructions issued for guidance of the French soldiers and National Guards during the siege of Paris.

WET.—Exposure to wet and cold, to all the states of the weather, climates, and seasons, forms but part of the soldier's existence. His health necessarily suffers from such exposure, nor can it always be avoided; as, for example, when he is on duty, or on service. He should be warned, however, against remaining in his wet state, if it can possibly be avoided. In temperate climates, rheumatism and chest affections are often thus brought on; in hot climates, fevers and dysentery—endangering, if not destroying life.

WINES.—If soldiers could be made to believe it, the use of light wines would be far more pleasant, and certainly much less injurious to them, than the spirits and beer in which so many love to indulge. In hot countries this would be especially the case. They may be informed that the use of the light wines of France is nothing new in our army; that when first placed upon a permanent footing these wines were regularly issued to them, and that at some of our foreign stations they continue to be so still.

WOMEN.—To quote from instructions issued to the French soldier—"Women who roam about in the vicinity of camps should be mistrusted. They are almost always

diseased. A moment of weakness may suffice to convey a justly dreaded disease, the cure of which is never certain and which not only affects its immediate subjects, but their children."

WORKSHOPS.—While it is for the advantage of men, both as regards their means and their health, that they should be employed in workshops, yet there are certain evils which need to be guarded against. The chief of these include crowding, want of ventilation, and over-heatedness of the men, thus producing an atmosphere that is as injurious in its effects as it is offensive. As a rule, the "shops" of regimental tailors and shoemakers present these defects to the greatest degree; and, to make matters worse, bits of leather and of cloth are often thrown into the fire maintained in such places, still further increasing their offensiveness. Frequent ablutions and baths are doubly necessary for the requirements of health in the men employed under such conditions.

WORRY.—Under this head a word of caution may be given to young non-commissioned officers. Soldiers, and particularly those that have not been long enlisted, or of the nervous temperament already alluded to, may not only be driven to *commit themselves*, but have their health impaired by a system of petty worry, and what is called "nagging," on account of small matters. Soldiers, after obtaining their discharge, sometimes express how painful to them was the constant watch kept over them by non-commissioned officers,—a condition which they looked upon as little else than one of continual restraint. There may be some reason to believe that in some instances this is felt to a considerable degree.

WOUNDED IN BATTLE.—*See* FIRST DRESSINGS.—In all civilised countries a special organisation exists for attending the wounded on, and removing them from, the field, so that the necessity has ceased for men engaged in combat to

quit the ranks on the plea of seeing a comrade safe to the rear. Nevertheless, occasions continually arise, not only during the fight but after it is over, where the intelligent assistance of men to their wounded comrades may be extremely beneficial; and late experience has clearly shown that it is in all cases perfectly impossible for the regular *ambulance* establishments to succour the fallen within a moderate time, however numerous and efficient their *personnel* may be. Hence the advisableness of soldiers being taught beforehand some of the more simple methods of giving help in such an emergency. Officers have naturally great repugnance against soldiers leaving the ranks during battle to escort wounded comrades to the rear. Not only is the strength of the effective force decreased in this way, but it is notorious that few of those who thus leave the ranks rejoin while the fight rages. The proportion of wounded varies greatly, according to the circumstances of the action; so also do the kind of wounds received, and the ratio of wounded to killed. Where shells are much used the killed are relatively more numerous as compared to wounded than in fights chiefly with small arms.

Wounds by Fire-arms.—If only in the fleshy part of a limb, without fracture of a bone and without much bleeding, undo or cut off the dress from over the part, bathe in cold water, and having soaked several folds of linen or other cloth in water apply it, securing it to the wound by means of a bandage, handkerchief, or other means.

Wounds with Fracture.—The injured limb must be handled with great gentleness to avoid pain to the person as much as possible and injury to the fractured member. The dress over the wound to be cut or undone. The limb to be laid out as straight as possible, and kept in that position by two or more long pieces of wood, bundles of twigs or of grass, strips of bandage or pocket-handkerchiefs, or portions of dress used as binders around the limb, thus protected to keep it steady. In fractures of one of the legs or thighs, the shortest way to secure it is to tie it to its fellow by means of a binder, or more than one, above

and below the injury. Wet cloths are to be applied to the wound itself.—*See* SWORD-CUTS.

WOUNDS WITH MUCH BLEEDING.—If the blood which rushes in streams from a wound be of a dark colour, it comes from a vein; if bright red, and it comes in jets, it is from an artery. If in either case a man could but have self-possession, the best plan is to press the point from which the blood is seen escaping with a finger or with a pellet of wet cloth, and hold either there until a surgeon comes or the wounded man can be taken to the rear. If men were taught beforehand to apply a *tourniquet* to the limb, or even to put on a handkerchief and twist it with a pinion, the plan would be to use one both above and below the seat of wound if possible to do so. It is almost needless to say that in all cases of severe bleeding the aid of the surgeon is of vital importance to the wounded man. He may and will, unless properly treated, rapidly bleed to death.—*See* HÆMORRHAGE.

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